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A HOUSE FOR TRADE, A SPACE FOR POLITICS: Excavations at the Arai-Bazarjugh Late Medieval caravanatun, Armenia

*Kathryn J. Franklin**

Abstract

According to predominant approaches to the Late Medieval historical and material record, Europe, the Near East and Eurasia were progressively integrated during the Late Medieval period by communities of style and networks of trade, as well as by political ties. Yet the mechanisms of trade and mobility – that is, the movement of people and materials – during this period remain largely unknown, as well as the ramifications of such regional or even 'global' economy on local society and politics. The late medieval princedoms of the Armenian Highlands were political entities operating within and between the states of Europe and Asia; the highland princedoms therefore provide an opportunity to examine regional political economy from the perspective of local interests. This paper presents results from excavations at the late medieval (12th-15th c. AD) Arai-Bazarjugh caravanatun ("caravan house" or road inn, also caravanserai), which was constructed by a local Armenian merchant-prince. The architecture of the caravanatun and the material assemblages recovered within it, integrated with historical data, demonstrate the role of the caravanatun as a point of intersection between the global trends of late medieval trade, and local Armenian political traditions.

INTRODUCTION

The Arai-Bazarjugh caravanatun ("caravan house" or road inn, also known as caravanserai) was excavated in the summer of 2011 as part of ongoing research in the Kasakh Valley, Republic of Armenia. Working in collaboration with the Project for the Archaeology and Geography of Ancient Transcaucasian Societies (Project ArAGATS), the author excavated units within the 20 m x 30 m caravanatun structure, recording material and architectural evidence which illuminates the late medieval occupation of the building by traveling merchants, and the provisioning of those merchants by the local people. The architecture of the caravanatun represents encounters between Armenian traditional basilica forms and arcaded styles widespread in Seljuk Anatolia. The excavated artifacts included ceramics similar in style to urban Armenian and regional Near Eastern pottery, suggesting that travelers staying in the caravanserai inhabited large scale 'material worlds' even while eating from locally produced vessels. The *metsatun* or merchant-prince Vache Vachutyan constructed the caravanatun in AD 1213 as part of a wider project of pious endowment throughout the Kasakh Valley and the territory of Aragatsotn. The architectural evidence and artifact assemblage from the 2011 excavations suggest that the caravanatun as a place built for trade acted to tie the Vachutyan political aspirations in Armenia to the wider world of exchange traversed by traveling merchants.

* University of Chicago, Department of Anthropology. Email: kathrynjane@uchicago.edu

BACKGROUND TO THE RESEARCH

Geographical and Historical Context of the Arai-Bazarjugh Caravanatun

The Arai-Bazarjugh caravanatun is located on the eastern slope of Mt. Aragats, the highest peak within the Republic of Armenia. The broad eastern shoulder of Mt. Aragats' volcanic cone forms the western margin of the Kasakh River valley: the eastern extent of the valley is defined by the curve of the granitic Tsaghkunyats range. Just south of the caravanatun's location, the highland drops off sharply into the broad plain of the Aras River: near the edge of the plateau the Kasakh River becomes deeply incised in a precipitous canyon, north of the smaller volcanic peak of Arailer (Fig. 1). Due to its steady change in elevation from south to north, the Kasakh Valley is a climatic transition zone, with the lower reaches marked by dense fruit orchards and the northern zone currently used for fodder and grain farming, as well as pasture. The valley was robustly occupied during the Bronze Age, and formed part of the territories administered first by the Urartians and then the Achaemenid Empire. An inscription discovered in the contemporary town of Aparan records gifts of land to local elites in the province of Nig (which comprised the Kasakh valley and Tsaghkahovit plain) by Tiridates III in the late third or early fourth century AD (Smith et al. 2009: 98).

For most of the medieval period (AD 301 to c. 1450) the administrative region of Nig was a component of the territory known as *Mets' Hayk*, *Armenia*, or *al-Irmaniyya*, by local, Sasanian Persian, Byzantine and Arab administrators respectively. Medieval Armenia contained the territory of the modern Republic of Armenia, as well as portions of northern Iran, Eastern Turkey and western Azerbaijan. More than consistent borders or centralized rule, the historical narrative of medieval Armenia has been defined as the story of the *naxarar* 'system' itself, a Persian-influenced tradition of dynastic offices and landed aristocratic families (Adontz 1970, Toumanoff 1963). As quasi-feudal, dynastic princes, the Armenian *naxarar*s were as or more likely to play neighboring polities off against each other as they were to make a unified play for Armenian sovereignty in the highlands (Ter-Ghewondyan 1976, Manandyan 1977). The later Developed Medieval period was especially characterized by what C. Toumanoff called 'pulverized sovereignty' in the Caucasus, juxtaposing limited periods of centralized rule (such as by the Bagratids at Ani and the Sheddadids at Dvin) with shifting alliances and invasions (1963: 35). In more global context, this period was also defined by the multifaceted projects of the Crusades, which enabled the articulation of markets between the Mediterranean and Asia across Near Eastern and Caucasus trade routes (Blackman and Redford 2005: 90-92; Heyd 1967:73-92). This emergent interaction on the global scale occurred synchronously with local transformations in the Armenian highlands, one of the many "places in between" as regarded from the perspective of developing Mediterranean merchant states and their traveling agents (e.g. Marco Polo, in Komroff 1926: 24-28).

On the periphery of Seljuk administration in the late 12th century, the remaining members of many of the *naxarar* princely houses (displaced by the Seljuk invasions) had

turned to brigandage in the mountain passes of the silk routes (Manandyan 1977:128-9). Amongst the actors jockeying for legitimacy in the highlands during this period was the Zakaryan family, who ruled from the citadels of Ani and Dvin as vassals of the Georgian Bagratids (Manandyan 1979). These regional rulers presided over the local *naxarar* community, which by the late 12th and early 13th century consisted of the same echelon of 'brigands;' these princely highland highwaymen now converted the spoils of conflict into material claims to sovereignty, including land (Manandyan 1977). Also among this class of highland administrators were the so-called *metsatun* or 'great-house' merchant princes. This emergent nobility, appointed to power by the Zakaryans and their peers, consisted of merchants who purchased noble titles and 'immovable' feudal property with cash gleaned from developing trade along the mountain highways and from their widely dispersed shares in workshops, mills, and markets (Manandyan 1975: 185; Babayan 1976: 554; Arakelyan 1964:182). Primary among these latter merchant-princes was Vache Vachutyan, assigned by the Zakaryans the territory of Nig as well as lands in Shirak and Ararat (Asatryan 2010: 35). Over the next century, the Vachutyan dynasty would situate their power both in highland feudal traditions of pious Christian authority and in the world of medieval trade.

By AD 1213, the date of Vache Vachutyan's construction of the Arai-Bazarjugh caravanatun (Khalpakhchyan 1971; T'oromanyan 1940: 119; Harutyunyan 1960:73-92), the institution of a hall for "protecting trade" had already long acted as a social and cultural mediator in the medieval Mediterranean and Near East (Hillenbrand 1994: 331). The threads that linked the various physical iterations of the road inn across time and space were their common functions of lodging, trade, and their shared role as nodes of regulation by local administrators of large-scale movements of goods and information (Constable 2003: 7; cf. Campbell 2010). For example, K. Cytryn-Silverman's study of Mamluk *khan*s in Syria demonstrates that while the form of any single *han* derives from a combination of historical exigency and functional requirements, the practice of inhabiting and especially of endowing the *han* was an institution that was central to pious commercial sociality in the Mamluk period (Cytryn-Silverman 2010, Sims 1978, cf. Tavernari 2010). Analyses of the Seljuk caravanserais of Anatolia (Erdmann 1961; Yavuz 1997) demonstrate both formal similarities across the Anatolian and Armenian highland corpuses as well as the potential for significant local variation in the social practices associated with the road inn building. Such practices were frequently implicated in political projects: for example, M. Önge (2007) has demonstrated the role of the charitable caravanserai or *han* within mid-13th century Seljuk performances of pious power on the part of viziers and sultans (2007: 53). The 'house' or hall for traders and travelers, which either provided lodging without cost or donated from its proceeds to charitable works, worked at multiple registers to connect mobile medieval subjects within local political aspirations.

The long tradition of Near Eastern *han* commerce and the architectural traditions of Seljuk caravanserais provide context for the contemporary Armenian caravanatuns constructed by highland *naxarar* princes. Caravanatuns nearly identical to the Seljuk *han*s in structure and decoration were built on the outskirts of Armenian cities and along highways (Haroutyunyan 1960). The Armenian *metsatun* princes used caravanatuns in a

mode very similar to their Seljuk contemporaries: revenues from the caravan-houses were donated by the *metsatun* princes to churches, and in return for their patronage the princes expected masses to be said for the salvation of their souls (Arakelyan 1964, Ghafadaryan 1948). Through these donations, publicized through inscriptions on the church walls, the Armenian merchant-princes transformed their mercantile wealth into pious authority, and in the process transformed themselves from merchants into traditional Armenian nobles. The role of the caravanserai in such value transformations (Munn 1986) is further indicated by the architectural *bricolage* that ties together road-inns with other spaces of power in the same period. This includes muqarnas (stalactite) vaulting and geometric stone carving (including five pointed stars and vegetal designs) which were used to embellish Seljuk caravanserais, Armenian caravanatuns, and Armenian Christian churches. All three of these classes of building were also occasionally decorated with animal bas-reliefs (thought to potentially be heraldic), indicating that trade and Muslim and Christian princely pieties occupied the same 'space' in the late medieval Armenian highlands and Eastern Anatolia. As will be explored below, this common architectural space overlapped with the shared world created through the circulation of goods and material styles.

Establishing the local landscape: 2010 Kasakh Valley Survey

In the summer of 2010 a pedestrian pilot survey was undertaken in the southern Kasakh valley in order to record data on settlement pattern and material distributions between the foothills of Mt. Aragats and the lower Tsaghkunyats slopes to the east. This survey encompassed the location of the Arai-Bazarjugh caravanatun, and the results of the survey delineated the local landscape around that structure as it had been produced over several millennia. During their late medieval tenure in the valley, the Vachutyan merchant-princes and their noble wives administered a landscape marked by Bronze-Age fortresses, early Christian churches at Apnagyugh and Kasakhi Dzor, and already-established villages such as Apnagyugh and Astvatsnkal (Petrosyants 1988; Petrosyan and Kirakosyan 1990; Karakhanyan and Melkonyan 1989, 1991). The role of the Kasakh Valley as a route for long-distance travel is attested as early as the Roman period; the late-Roman Peutinger Atlas noted a route connecting the Ararat and Shirak plains through the Kasakh: this route is still used today to transport goods and people between Yerevan and Tbilisi (Manandyan 1965: 106-108; Asatryan 2010: 25).

In the first half of the 13th century, the Vachutyans undertook a conspicuous program of church renovation and construction, literally writing their names into the landscape with prominent endowment inscriptions (Ghafadaryan 1948: 82-83; Babayan 2002, 2005). Building and conspicuously endowing churches had been a part of traditional *naxarar* authority since at least the 7th century: the Vachutyans drew on this earlier tradition with a critical innovation, in that their donations derived from mercantile profits, and that their constructions extended beyond churches (Greenwood 2004). The Arai-Bazarjugh was a component within this building program: the concrete-and-rubble wall fill of the caravanatun contains not only fragments of previously used building stone but also potsherds, indicating

that the construction crews who built the caravanatun brought building material from the neighboring settlements to construct the 7m-high walls (Fig. 2). Nearby late medieval occupation existed both at Apnagyugh, on the rim of the Kasakh gorge, and also half a kilometer west from the caravanatun at the Ambroyi village site, on the shoulder of Mt. Aragats. The settlements were dated using survey data consisting of slipped and glazed green and polychrome sgraffiato pottery, as well as red wares dated in Armenia to the AD 12th-13th c. (Ghafadaryan 1952, Kalantarian et al. 2008, Kalantaryan et al. 2009). It is further significant that a spring-fed stream flows from the slopes of Aragats past the site of the caravanatun, which sits atop a higher elevation. This hydrological feature suggests additional motivation for the location of the caravanatun on the mountain slope, as a reliable source of water would have been critical to the function of the road-inn (Cytryn-Silverman 2010, Sims 1978).

As discussed above, the Vachutyans constructed the caravanatun at Arai-Bazarjugh at the same time as they built and renovated churches; however, the caravanatun was intended as a 'sanctuary' for a different set of subjects, those that traveled rather than congregated. What ties this concept of Armenian local politics together is the link between political power and circulation, whether of the goods which generated the mercantile wealth donated to churches, or of the people themselves passing through the caravanatun. This argument is supported at the small-scale by data from excavations within the Arai-Bazarjugh caravanatun itself.

2011 Excavation Season at the Arai-Bazarjugh Caravanatun

Located in Aragatsotn Marz approximately one kilometer south of the contemporary village of Arai-Bazarjugh, the caravanatun's standing architecture currently consists of a 5m-high wall of stone and mortar, oriented roughly east-west; this is the north wall of the rectangular building (Fig. 3). The original ashlar facing stones, shaped from Aragats volcanic tuff, have been almost entirely stripped from this wall, leaving the concrete-and-rubble core of the wall exposed. The roof of the caravanatun was constructed of stone rubble and concrete as well, a technique which evokes both contemporary Seljuk architecture and Armenian construction (Hillenbrand 1994: 346-349). The roof of the caravanatun had collapsed outward, leaving large ruins to the exterior of the building but a fortuitous lack of debris within the caravanatun interior.

Excavations were laid out based on information gathered from architectural and ethnohistorical sources, and further informed by an examination of the remaining caravanatun architecture. Extant data on the Arai-Bazarjugh site is contained within the general architectural survey of T'oromanyan (1942) and in the summary of Armenian caravanatun architecture compiled by Haroutyunyan (1960). Within Haroutyunyan's account of the caravanatun ruins, he contradicted the observation by T'oromanyan of a door in the northern side with a previous ethnohistorical account by Shakhatunyan, who visited the site in the early 19th century and recorded the AD 1213 date inscription and

door in the south (Shakhatunyan 1842, 168-9, in Haroutyunyan 1960: 42). Although the external face of the northern wall is not preserved, examination of the wall core structure revealed the outline of the caravanatun's three-arched gallery design, and the locations on the wall where the transverse arches connected are visible as thickenings in the masonry (Fig. 3). Such a three-naved structure, typical of medieval Armenian basilica churches, was also used in the construction of late medieval caravanatuns elsewhere in the Armenian Highlands (e.g. the structures at Aruch and Jrapi; Haroutyunyan 1960: 29-35, 38-41) and in Seljuk Anatolia (Yavuz 1997, Ögel 2008). Four excavation operations (AC1-AC4) were opened in order to explore this possible gallery scheme for the Arai-Bazarjugh caravanatun, and to investigate the material cultural deposits in different sections of the building (Fig. 4). Situated strategically within the area of the building, these excavations both illuminated the construction of the caravanatun (Fig. 5) as well as suggesting an account of social activity within the building before and after its collapse.

Stratigraphy and Architecture of the Arai-Bazarjugh Caravanatun

The excavations established that the floor of the caravanatun's galleried space was divided into three levels, with the central clay floor of the hall lying at an elevation approximately 50cm above the flagstone floors of the lateral galleries. These flagstone floors (excavation Loci AC1.24, AC3.16) sloped downward from interior to exterior, and abutted the foundations of the exterior walls (Figs. 5, 6). The walls consisted of a rubble and cement core and tuff ashlar facings: however, in their upper extent these facings had decayed away or been robbed from their concrete sockets. Lying on top of the floors, and beneath thick levels of architectural collapse (including gravels, decayed concrete and fragments of building stone), was encountered a thin layer of fine soil deposit, containing flat-lying sherds and bone fragments (AC1.21, AC2.12, AC3.14) (Fig. 7).

In the central and southern areas of the caravanatun, the floors consisted of red-brown compacted clay platforms, marked in some areas by evidence of burning (AC1.22, AC2.16, AC4.10, AC4.12) (Fig. 8). Between these sections of clay floor ran rectangular channels or gutters built from tuff ashlar (AC2.19, AC4.16). One channel was discovered running east-west in Operation AC2, and within Operation AC4 was uncovered the junction of a second, central channel with a southern gutter near the door of the caravanatun (Fig. 9). Within his 1960 description, Haroutyunyan described how the eastern wall of the caravanatun was pierced by analogous gutters at higher levels in the masonry; possibly, these drained from the stable areas (1960: 44). Within the excavated channels were encountered stratified lenses of darkly stained deposits, which contained sherds and a number of iron artifacts. In the northern section of the excavation were encountered two lines of rectangular piers, which would have supported the arches that divided the hall (Figs. 5, 6, 7). The piers were in varying states of preservation, with one (AC2.10) preserving a squared masonry pedestal, while the others rested on rough tuff bases embedded in the clay floor. As demonstrated by operations AC1 and AC2 this floor terminated on each side in the lip of two troughs (AC1.20, AC3.10). Built from dressed tuff slabs, these troughs abutted the floor and ran

from north to south, along the long axis of the caravanatun. The inner rims of these troughs were roughly level with the clay floor on their inner sides, while on their exterior sides the troughs sat atop the sloping flagstone floors (Fig. 8).

Embedded in thick collapse deposits above the floor levels, the ceiling and arches of the caravanatun were recovered in the positions where they had fallen. Within the western extent of operation AC2, excavations uncovered the collapsed line of *voussoirs* fallen from the gallery arches which had rested on the square tuff piers (Fig. 9). Similarly, collapse strata within operation AC4 contained a still-aligned layer of rectangular, curve-faced *voussoirs* that had fallen from the barrel vault of the central gallery ceiling. The arcades and ceiling were constructed through similar methods: a facing of rectangular *voussoirs*, measured and dressed on five faces, supported a superstructure of rubble and mortar. The lateral faces of the gallery arches were faced with small tuff ashlars, but contained a rubble and mortar core.

In the upper layers of soil deposit were discovered numerous burned lens features, indicating the use of the caravanatun site as a shelter even after its partial collapse (e.g. Locus AC1.03). One such campfire locus was situated just on top of the architectural collapse deposits (AC1.15), indicating that after the original phase of collapse, a hearth was built from broken wall ashlars within the shelter of the remaining vault architecture. Such features were grouped primarily in the northeast corner and central area of the caravanatun, tentatively corroborating local reports that indicated that the ruined caravanatun structure was used from the time of its collapse until recent years as a pastoralist campsite and a windbreak for shepherds and fieldworkers.

Artifactual Evidence and Interpretations

From the stratified deposits of the caravanatun excavation were recovered cultural materials including ceramics, metal artifacts, and glass; animal bone fragments and botanically-rich soil samples were also collected, and are currently undergoing analysis. The diagnostic ceramic evidence from the caravanatun was analyzed in collaboration with colleagues in the medieval department of the National Academy of Arts and Sciences Institute of Archaeology and Ethnography in Yerevan.

Pottery

Based on comparisons with assemblages from elsewhere in the Kasakh Valley and contemporary excavations in Anatolia, the ceramics recovered from the floor contexts of the caravanatun were classified as produced during the early thirteenth century to early fourteenth century AD (Fig. 11-16) (Sarksyan 1990: 186-7, Babajanyan and Mirijanyan 2013, Redford et al. 1998, Moore 1993; Mitchell 1980: 221, 49, Kalantaryan et al. 2009). This assemblage, largely recovered from the gutter contexts of excavation units AC2 and AC4, is relatively small and quite fragmentary, but nonetheless the diagnostic sample (n=525) yielded general categories under statistical analysis. The coarsest of these

categorical divisions was glazed vs. plain wares: of these, the latter category represents the great majority (98%) of the analyzed assemblage.

The dominant categories of plain wares are cooking jars and bowls: identifiable sherds from these two categories made up 12.5% and 12.1% of the diagnostic assemblage, respectively. These vessels were for the most part made of the same local clay and tempered with the same mixture of micaceous and obsidian-bearing sands, and (their rims at least) fired to a similar range of medium reds (2.5YR5/4, 5/6; 2.5YR6/4, 6/6); for this reason they have been identified as within a larger Armenian late medieval red ware corpus (Ghafadaryan 1952: 185). The excavations recovered an assemblage of fragments of rims from carinated and globular bowls (Figs. 12, 13). Bowl base fragments were also found, and from these examples in conjunction with the extant published red ware corpus it can be generally stated that the bowls had round ring-form bases, and were wheel-thrown (Fig. 14). The bowl rims fell into two large categories: plain round rims (22.4% of total bowl rims) and everted flattened-round rims (34.2% of total bowl rims). The bowl fragments recovered from the caravanatun floors were consistently treated with slip and frequently burnished: the slip applied to the vessels varied in color from the vessel body color to a bright red. Similarly, style and degree of burnishing varied from still-visible parallel smoothing to a consistent, glossy red surface. More complete vessels of equivalent type were found at the 13th-14th c. AD site of Teghenyats Vank, a monastery just to the east of the Kasakh Valley Survey area (Sarksyan 1990, fig. III; Babajanyan and Mirijanyan 2013, pl. IV). The red burnished ware bowl assemblage recovered from the Arai-Bazarjugh caravanatun appears to represent a regional, late medieval style in dining wares, even if the particular forms of such small red bowls varied (see for instance similar red burnished bowls observed at Tille Höyük: Moore 1993: 71; and at Gritille: Redford 1998: 106).

The jar assemblage from the caravanatun includes an assortment of rim fragments from medium-sized cooking jars (Fig. 15). In general these jars were produced of red-to-buff clay with sandy inclusions, frequently slipped and burnished on the exterior. Though no complete vessels were found, a large number of rounded body fragments recovered in combination with the rim assemblage indicates that these jars had rounded bodies, wide necks and upright rims. One fragment of such an upright rim included a partial strap handle, which would have attached to the vessel shoulder (AC3.9.1). Unfortunately, a full profile could not be reconstructed from any of the fragments. Among the diagnostic sherd sample, larger jar rims outnumbered jar bases; however, the body-sherd corpus contained a large quantity of broadly curved, coarse sherds with roughly slipped and burnished, sometimes burnt exteriors. It is probable that the cooking jars used at the Arai-Bazarjugh caravanatun had thick, coarsely curving and perhaps hand-formed bases, like the wide-mouth red ware jars which have been found at the 12th-13th c. Armenian site of Yeghegis (Kalantarian et al. 2009: pl. XLVII). Similar to the bowl corpus from the caravanatun, it could be argued that these wide-mouth cooking jars fit within a regional late medieval corpus of open, wide necked, pots with handles and rounded or broad flat bases. However, the caravanatun assemblage includes no examples of painted or glazed cookwares, which are observed in contemporary contexts and on analogous ceramic forms (Redford 1998: 102). Potential

relationships between the serving vessels being used at the caravanatun and contemporary sites in Armenia and elsewhere, as well as the implications for late medieval food culture, are still being investigated. But the initial observation drawn from these parallels is that in addition to being integrated by stylistic links in glazed and 'fine' ware traditions, the late medieval Near East was also partially unified by a 'material world' of shared culture having to do with how food was prepared (stewed in large, necked vessels) and served (apportioned into small red bowls) in more every-day contexts.

The evidence for medieval glazed wares at the Arai-Bazarjugh Caravanatun consists of small fragments of primarily monochrome-glazed and sgraffiato-decorated bowls (Fig. 11). These wares are closely comparable to forms found at the contemporary Vachutyan-endowed monastery at Ushi (Babayan 2002; F. Babayan personal communication) and may have been produced in the highland towns in participation within more widespread styles (e.g. the 'Garrus' tradition, cf. Watson 2004: 260-4). One sherd recovered from the gutter context of Operation AC2 is a fragment of the flat horizontal rim of a broad bowl or dish made in a style highly suggestive of the so-called Port-St.-Symeon tradition (Fig. 11: A; Fig. 16). Typically, such vessels are broad, relatively shallow bowls or dishes with ring bases and broad flat rims, sometimes with imitation beaded edges. While the Arai-Bazarjugh sherd preserves only a small portion of sgraffiato decoration, it appears to be part of a running palmette border which is common to ceramics of the Port Saint-Symeon style, produced across a considerable area of the Near East during the 12th-13th century period (Vorderstrasse 2005b). The measured diameter from the Arai sherd is comparable to the average diameter of these similar vessels from other contexts, approximately 35 cm (Boas 1994: 107-109).

Beginning in the late 12th and early 13th centuries, the production of sgraffiato ceramics was a widespread Mediterranean and Near Eastern phenomenon that combined the elite taste preferences of European and Muslim consumers and traders (Vorderstrasse 2005a: 119). Motivated by local tastes as well as the globalizing efforts of Genoese and Venetian merchants, among others, this stylistic phenomenon constituted an artistic *koine* with production located from the Syrian coast to Transcaucasia, but centered nowhere, and continuing well into the period of Mongol administration in the Armenian highlands. (Blackman and Redford 2005: 92, also Vorderstrasse 2005a:19). Ceramic evidence recovered from the Arai-Bazarjugh gutters testify that the Kasakh Valley was articulated with regional worlds of taste in ceramics and, potentially, of cuisine as well. The fragmentary evidence of glazed wares hints at the role of the caravanatun in housing overland trade in fashionable commodities, while the red ware assemblage indicates that such a 'luxury' trade was always contextualized by interaction with other regional and local preferences.

Small Finds

The assemblage at the Arai-Bazarjugh caravanatun also included a sample of iron artifacts in a fair state of preservation, recovered from the gutter features and cobblestone floors (Fig. 17). Though singular artifacts such as a knife blade, harness ring and needle

were found, the most numerous category of artifact was flat-headed iron nails. Fragments of iron shoes for horses or donkeys indicate the amount of animal patronage that frequented the caravanatun. These equid shoes are of a type found as well at contemporary late medieval sites such as Gritille and Tille Höyük (Redford 1998: 171; Moore 1993: 151). The majority of iron artifacts were found in the gutter features of operations AC2 and AC4: this suggests the use of the central part of the caravanatun for various habitual activities linked to the everyday practice of trade, such as repairing the trappings of the caravan as well as meal preparation and animal care. Also among the metal artifacts was a complete iron arrowhead (Fig. 18). Through initial comparison with arrowheads found in the highlands and Eastern Europe, this artifact has been given a preliminary Mongol characterization, raising further questions regarding the role of the caravanatun within negotiations of regime in the highlands after the 13th century Mongol invasions (Sarksyan 1990: 184, Medvedev 1967: 57). Arrowheads similar to that found at the caravanatun have been found at Dvin (Ghafadaryan 1952: 161) as well as at Tille Höyük (Moore 1993: 153). After the Mongol invasions of Armenia in AD 1236, the Vachutyans continued to rule the Kasakh Valley and other territories, but as vassals of the Ilkhanid administration (Bedrosian 1979, Boyle 1977).

DISCUSSION: LOCAL STONES, GLOBAL SPACE

The excavated architecture indicates that the Arai-Bazarjugh caravanatun was a rectangular structure with its entrance probably located centrally on the southern end (Fig. 5). Two lines of arches resting on six piers divided the hall into three long galleries, in a manner highly suggestive of medieval highland basilica churches and other monastic buildings, such as those bestowed with gifts of merchant wealth by the Vachutyans and other *metsatun* princes (Khalpakhchyan 1971, Kalantaryan and Babayan 2002). The caravanatun structure departs from local pious precedents, however: in the two lateral galleries just outside the arches, stone fodder troughs ran the length of the building. This pattern of spatial divisions indicates that the lateral sections of the building were intended for the containment and care of animals, while human travelers were accommodated in the central gallery on packed clay floors. Stone troughs comparable to those at Arai-Bazarjugh have been found in Near Eastern Crusader castles such as the late-12th c. fortress at Vadum Iacob in Israel (Boas 1999: 115); however, the location of the troughs within the caravanatun structure itself indicates the specific, dedicated function of this building to the sheltering of the merchants' necessary pack animals, as well as humans. The caravanatun at Selim, endowed by the *metsatun naxarar* Chesar Orbelyan in 1350 (Haroutyunyan 1960: 19) features a similar arrangement of the three-naved hall with troughs serving lower outer galleries. At Selim, the troughs were integrated into the structure of the arcades and run between the rectangular piers of the arches; this suggests that the basic design seen at Arai-Bazarjugh was consolidated in the later structure, while maintaining an emphasis on the shared use of the enclosed building by travelers and their beasts. As discussed in the sections above, their architectural form and this integrated functionality linked the Armenian caravanatuns with contemporary caravan-halls and their patrons in Seljuk Anatolia (Yavuz

1997, Önge 2007, Ögel 2008) as well as transit architecture and trade culture in the greater Near East. These observed regional and temporal links suggest that the architecture of road-inns like the Arai-Bazarjugh caravanatun not only connected trade practice with other forms of traditional practice (such as that which occurred within highland churches and crusader castles), but also tied that space to an emergent, developing community of traders.

The tuff-built caravanatun demonstrates a concerted effort to work within the traditions of highland architecture while at the same time referencing a regional system of trade-spaces which allowed for specific cultural practices, including the accommodation of beasts and pious hospitality to travelers. Initial assessment of the material assemblage found within the building supports the argument that travelers at the caravanatun not only carried the historically attested luxuries of Silk Route trade, but also themselves were consumers, of meals prepared in locally made, 'Anatolian style' vessels. Incorporating this material analysis with historical accounts of medieval highland political practice, it is possible to imagine that people living in the Kasakh valley would have perhaps thought of themselves as connected to the wider medieval world, whether through standing in the *gavit* of a church endowed with Venetian ducats, or preparing food in a style to satisfy the tastes of hungry travelers at the road-inn. Existing within a network of commensurate spaces but also particular to its own landscape and architectural traditions, the caravanatun housed a particular medieval political community, whose 'place' was as much the highway itself as the valley through which it passed.

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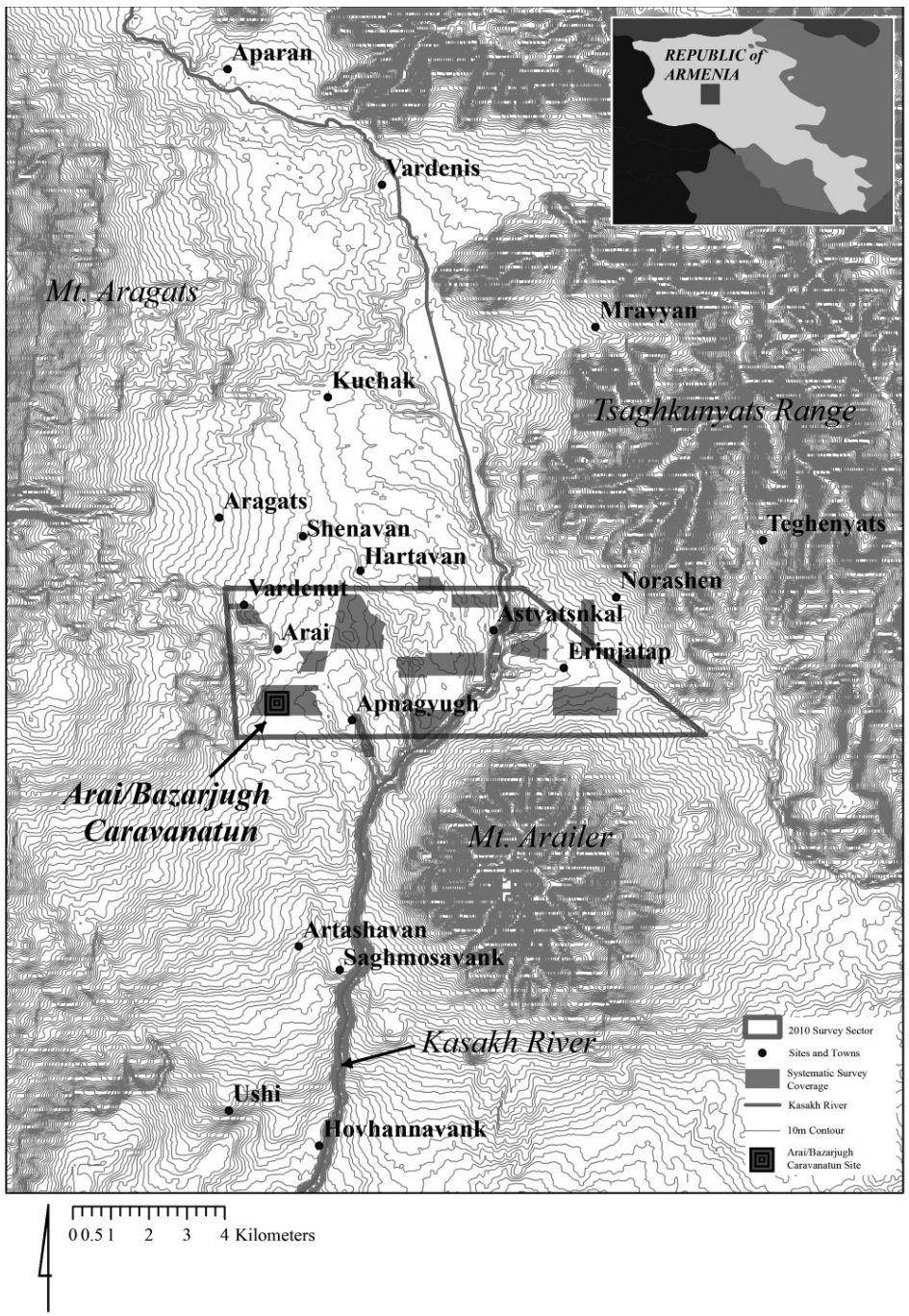

Fig. 1. A contour map of the Kasakh Valley, Armenia, showing the project survey area and the location of the Arai-Bazarjugh caravanatun site.

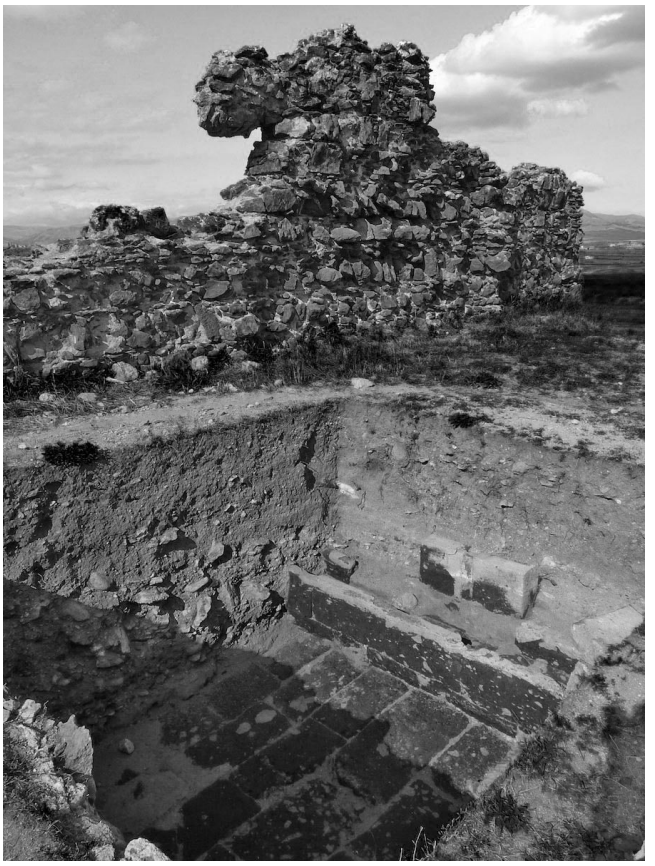

Fig. 2. South face of the remaining architecture of the Arai-Bazarjugh caravanatun, viewed from the interior of the building.

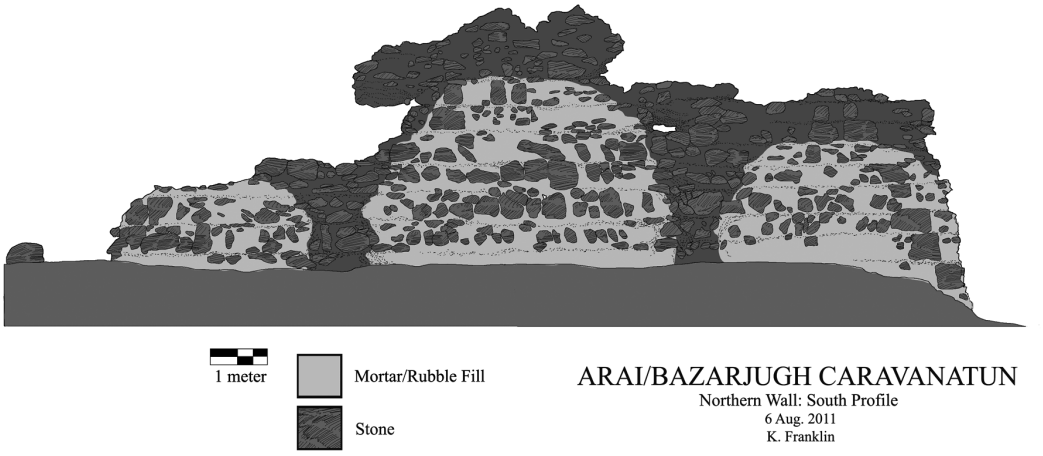

Fig. 3. Architectural drawing of standing architecture at Arai-Bazarjugh, indicating traces of the arch and roof structure.

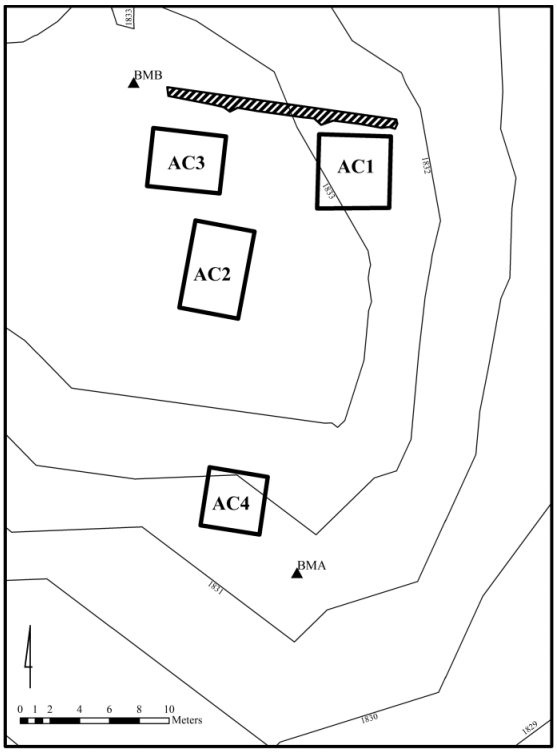

Fig. 4. Map displaying layout of excavation units at the caravanatun site, in relation to site topography and standing architecture.

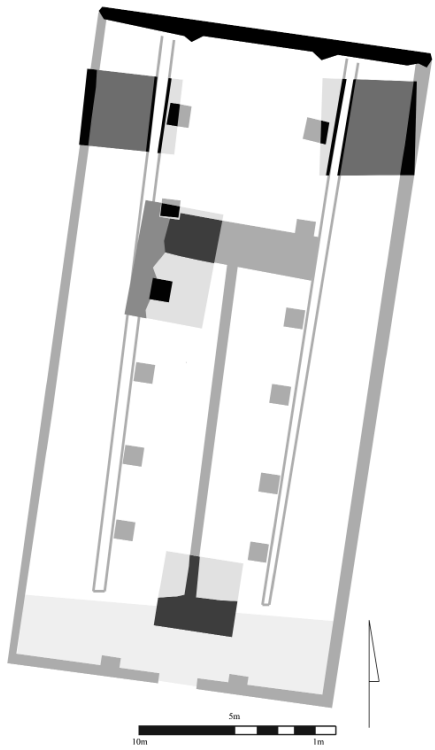

Fig. 5. Schematic architectural reconstruction of the Arai-Bazarjugh caravanatun, showing excavated areas, troughs, piers and conjectured gutter locations.

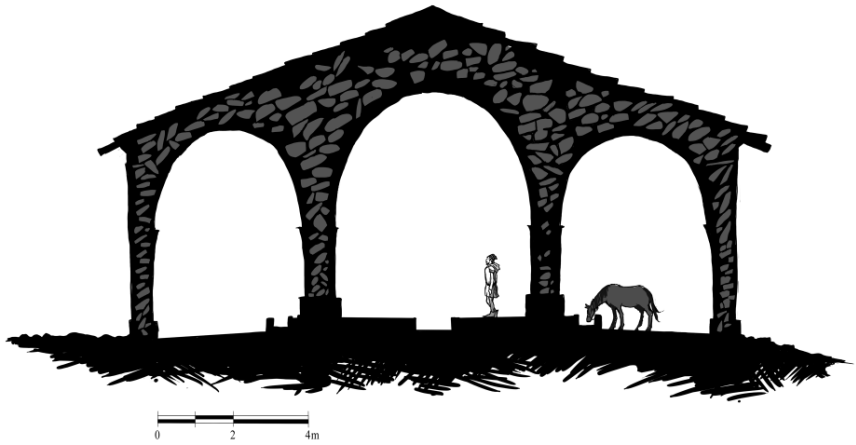

Fig. 6. Scale reconstructed longitudinal cross-section of the Arai-Bazarjugh caravanatun, as viewed from the south.

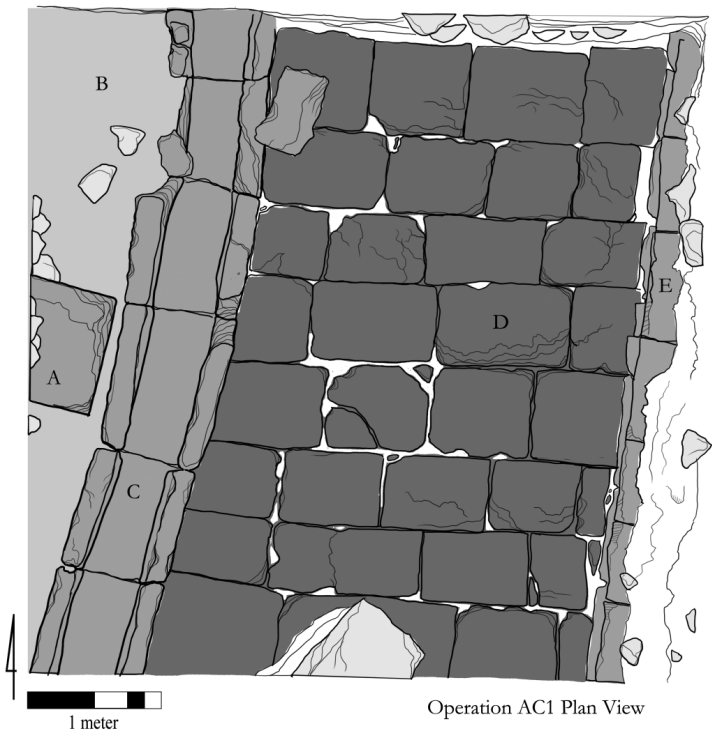

Fig. 7. Operation AC1 plan view, showing A: ashlar pier; B: clay floor; C: trough feature; D: flagstone floor, and E: external wall.

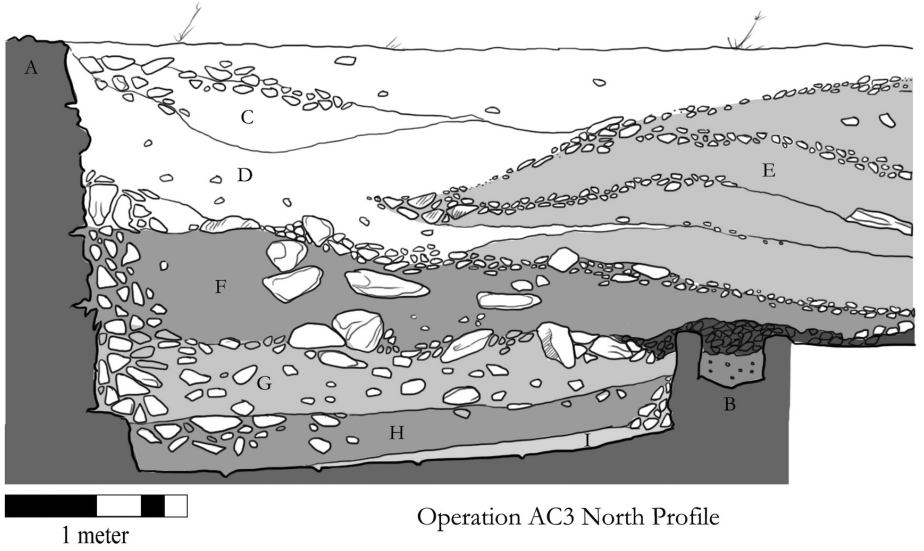

Fig. 8. Northern profile of Operation AC3, showing A: western wall; B: trough; C and D: later wall collapse; E and F: alternating ceiling and arch collapse deposits; G and H: initial architectural collapse; I: pre-floor fill.

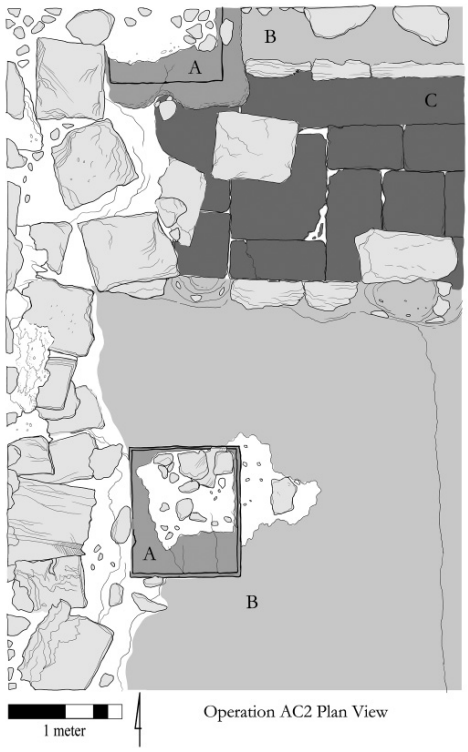

Fig. 9. Operation AC2 plan view, with A: rectangular ashlar piers; B: clay floors and C: stone-lined gutter or channel feature.

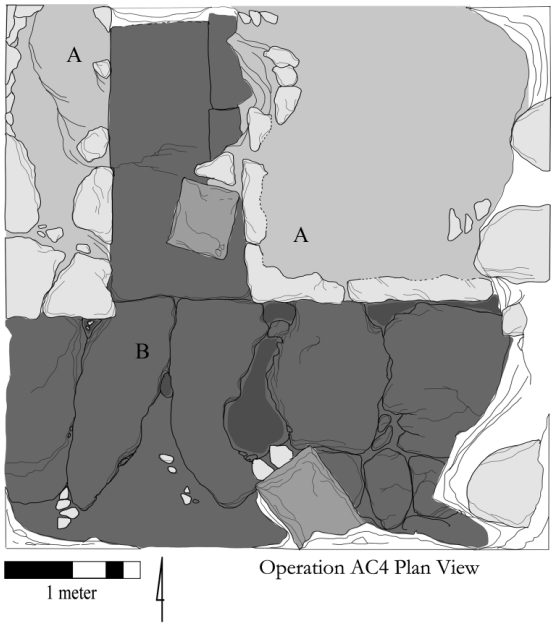

Fig. 10. Plan view of tuff-ashlar-lined gutter in Operation AC4.

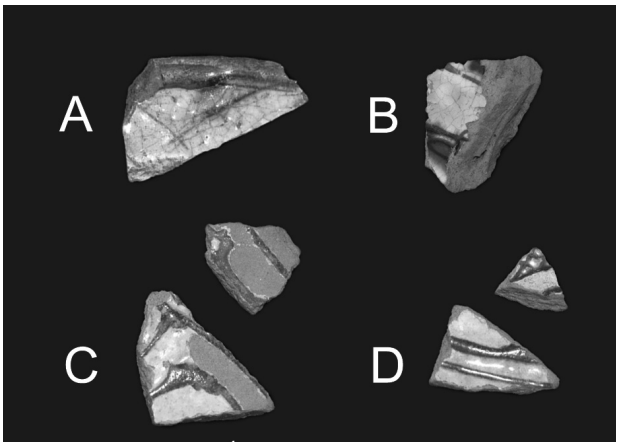

Fig. 11. Glazed ceramic fragments from the caravanatun gutter features. A: Polychrome (green and brown/purple) sgraffiato sherd from Operation AC2; B: Turquoise and Purple sgraffiato sherd from Operation AC4; C: Yellow monochrome sgraffiato fragments from Operation AC4; D: Green (above) and yellow monochrome sgraffiato fragments from Operation AC4.

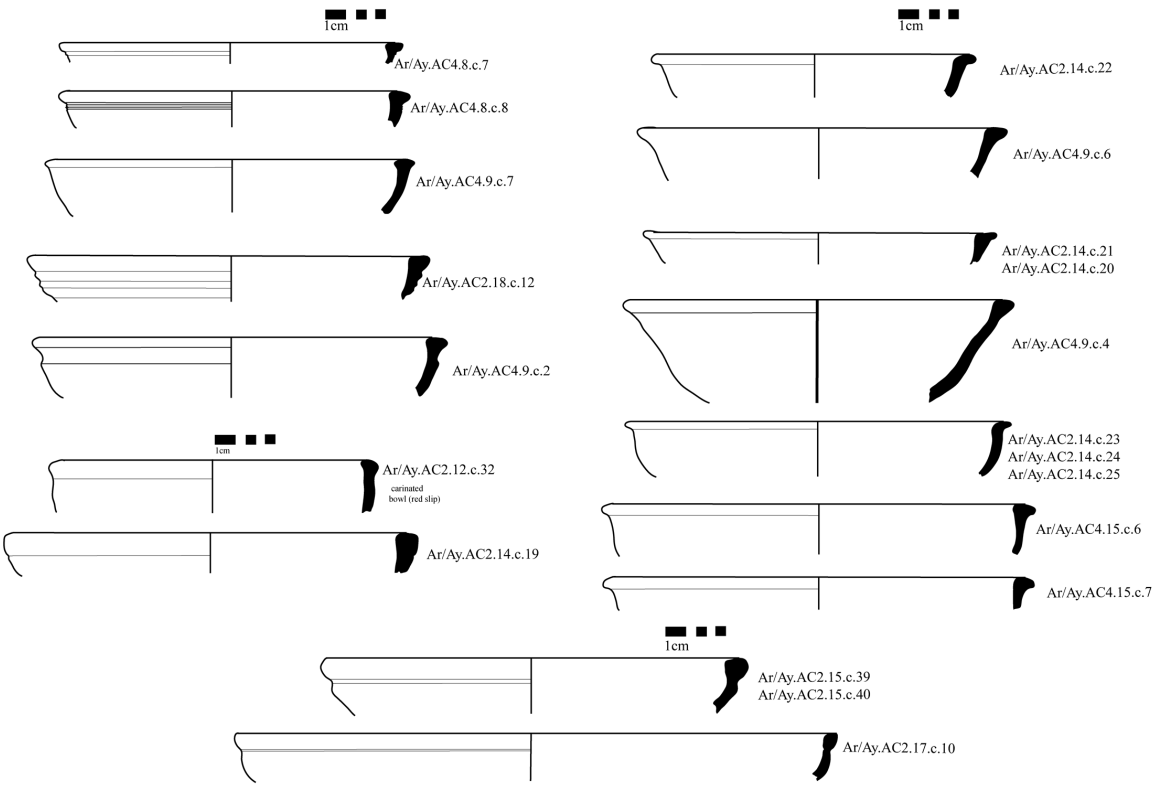

Fig. 12. Red ware everted bowl rims from the caravanatun floors.

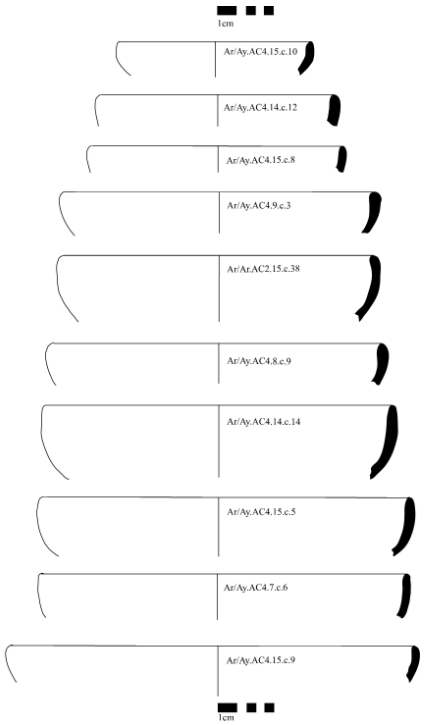

Fig. 13. Red ware round bowl rims.

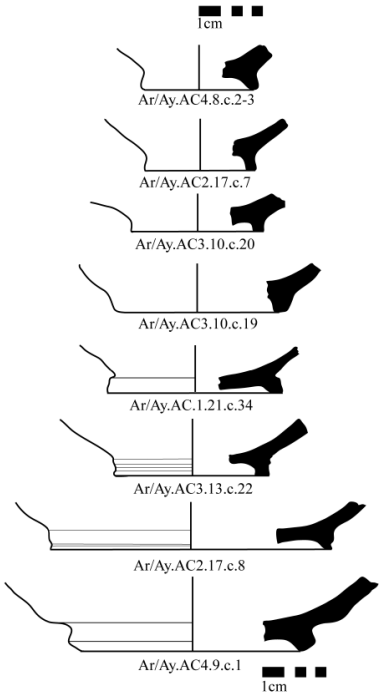

Fig. 14. Red ware bowl ring bases, showing variations in general form.

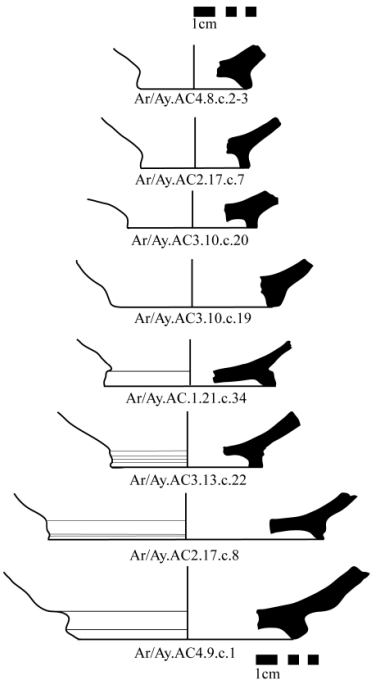

Fig. 15. Red ware cooking jar fragments, showing open rims and base variants.

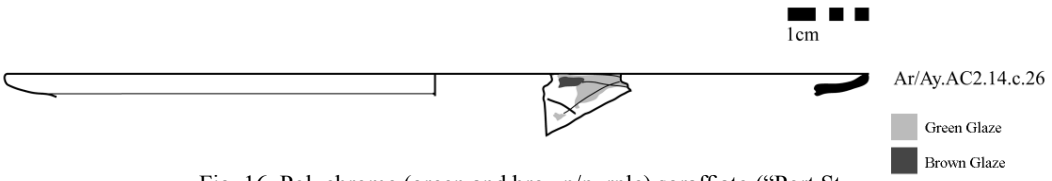

Fig. 16. Polychrome (green and brown/purple) sgraffiato ("Port St. Symeon") sherd and vessel profile reconstruction.

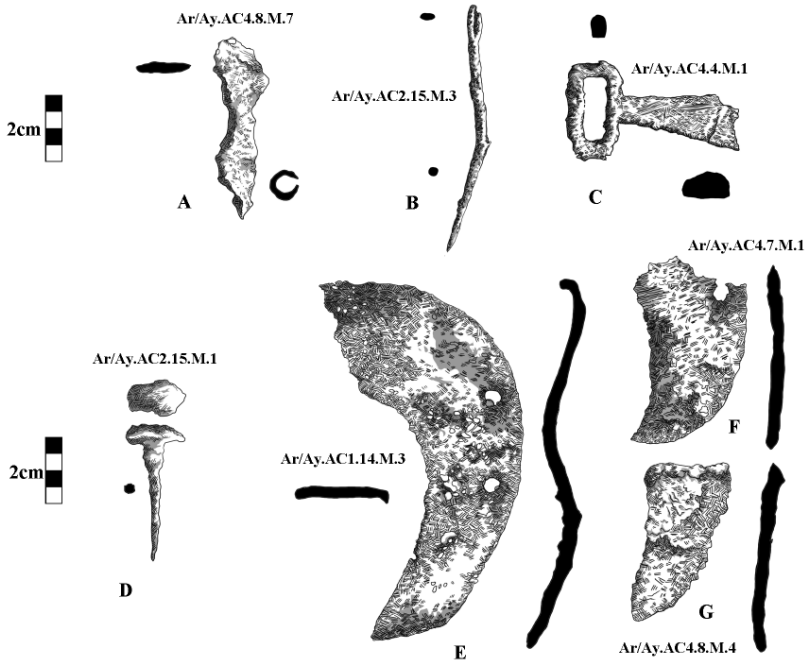

Fig. 17. Iron artifacts. A. Tubular arrowhead; B. Needle; C. Key; D. Nail; E-G. Equid shoe fragments.

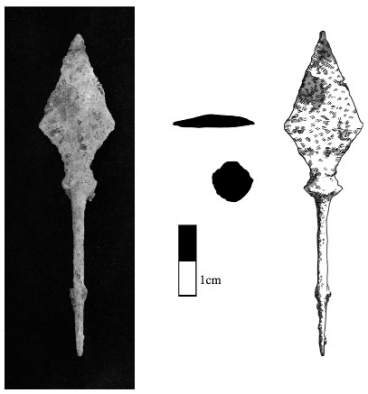

Fig. 18. Ar/Ay.AC2.15.M.2. Mongol-style arrowhead from gutter feature in operation AC2.

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THE CRAFTSMEN AND MANUFACTURERS IN THE URARTIAN CIVILIZATION

*Rafet Çavuşoğlu, Bilcan Gökce and Kenan Işık**

Abstract

Urartu became a powerful state in the Near East during the first millennium BC. In spite of geographic impediments such as high mountains and strong streams, and a severe climate, the Urartians developed a high level of production in every area of craftsmanship. We encounter in Urartian written sources professions indicating craftsmen and manufacturers who constituted the base of this production. Iconographical and archaeological findings prove the existence of further types of handicrafts not mentioned in written sources. In our study, some questions regarding gender and social status related to Urartian craftsmen and manufacturers are clarified. Additionally, places where production took place are identified. The study gives an overview of the world of arts and crafts in Urartu, and the people behind it.

Introduction

One of the main factors that constitute the socio-economic structure of societies is craftsmen and manufacturers. As to ancient Near Eastern sources, the craftsman is defined as the person who does the work requiring experience, skill and mastership, together with other individuals. The person who produces all kind of goods by processing raw materials is known as the manufacturer (Bienkowski 2000: 80).

A number of studies exist on the classes that formed the socio-economic structure of ancient Near Eastern societies. For example, there are some studies on the socio-economic structures of the societies of Neo-Assyria (1000-612 BC), Neo-Babylonia (612-539 BC), Persia (539-330 BC) and Urartu (859-638 BC). Thus Zimansky (1985: 80-94) and Salvini (2006: 140-144) state that there were different ethnical and social classes in the Urartian society, a society that dominated during the 9th-7th centuries BC a geographical area including from the Euphrates in the west to Iranian Azerbaijan in the east, from Gökce Lake and Aras Valley in the north to the Taurus and the southern part of Lake Urmia in the south.

In this article, we attempt to determine the importance of craftsmen and manufacturers within the social organization of the Urartian state, in the light of the written sources, and of the archaeological findings as well as the evidence of visual arts uncovered at many Urartian sites, especially in Toprakkale (ancient *Rusaḫinili*) and Karmir-Blur (*Teišebani*). The aim of this study is to reveal the relationships between craftsmen and manufacturers within the socio-economic organization of the state as determined by the craft and manufacturing branches of the society, demographic indicators, workshops and division of labour between the genders, and the known and/or presumed social organization of Urartian sites used as

* Yüzüncü Yıl University, Van, Turkey.

examples. Although the names of some craftsmen and manufacturers are not mentioned in the Urartian written sources, we will attempt to identify what data is relevant to the existence of craftsmen and manufacturers in the light of the archaeological material. In addition, in order to enlighten the role of the craftsmen and manufacturers, this data and interpretations will be compared with contemporary civilizations, mainly the Neo-Assyrian, a direct contemporary of Urartu.

Textiles

It is clear from the archaeological findings, written sources and the visual arts that weaving was an important line of work in the Urartian state. In Urartu, a highland area, animal husbandry was the main source of living – as it is at present. The Urartians could have provided their wool that was the main raw material of textile from sheep. Thus, regarding Urartian geography and the severe climatic conditions experienced in the area, the importance of wool can be understood. Additionally, Urartian written sources record that wool was transferred between cities (UPD: no. 10). It appears that in some cases weaving activities took place in workshops that were established in Urartian centres for the needs of the state. A document that clarifies this issue was discovered in Toprakkale. In the tablet, the expression 68 MUNUS.GAD-*hi-e* has been translated as "68 weaving women"[1]. These weaving women (MUNUS.GAD) appear in the second category of the list in this tablet. MUNUS.GAD is understood to be a Sumerogram but is seen only in this tablet among the surviving Urartian texts as yet. Although some words[2] defining women in Urartian written sources are known, especially in booty lists, women who had an occupation are documented in this tablet for the first time.

Another source of evidence about weaving women in Urartian society are visual representations, with weaving looms and figures of weaving women shown on fragments of a few metal belts (Kellner 1991: pl. 70: 282; Seidl 2004: pl. A-3) (Fig. 1 A-B). In weaving scenes, female figures described as being in front of a sloped loom are probably weaving rugs, carpets or fabrics. It has been stated that in those Neo-Assyrian texts contemporary to the Urartian state, the people named as LÚ.TÚG.DU$_8$.DU$_8$ *ka-mì-du* were felt weavers and carpet weavers, while the people called LÚ.UŠ.BAR were simply weavers (Kinnier Wilson 1972: 68).

On a fragment of an Urartian metal belt in Van Museum, both women wool-spinners and weavers are depicted[3], with weaving looms sloped at an angle of about 45 degrees (Fig. 1 B). There are similar examples in Near Eastern civilizations. On a relief dated to 8th-7th centuries BC and found in the acropolis of Susa, for example, an Elamite woman is shown while spinning (Amiet 1966: 540, see also fig. 413). Also on a Maraş tomb stele

[1] Diakanoff 1989: 99: although the expression here for weaving women was previously translated as 68 LÚGAD (UPD: no: 12, p. 39), it was read as 66 MUNUSGAD (see Salvini 2007: 38ff). Sumerian GAD(A) is "linen".

[2] In the Urartian language, the words defining woman are MUNUS (CTU I: 46) , MUNUS *lutú* (CTU II: 142ff), LÚ*úedia or* MUNUS *úedia* (CTU II: 223ff). Melikishvili translated these last words as "woman" (UKN II: 480-485).

[3] From Rafet Çavuşoğlu's archive (this piece was in the study collection at the time he researched belts in the Van Archaeological Museum).

dated to the Late Hittite period (1200-700 BC), there is a female figure spinning in a sitting position on a stool (Darga 1992: 318, see also fig. 304). In Phrygian Gordion (750-300 BC), during the excavations in a room defined as belonging to a service building, many spindles and clay spindle-whorls,[4] and a comb interpreted as a device to be used in a weaving loom, were uncovered (Voigt 2007: 72).

In addition to the written and visual data indicating weaving activities in Urartu, spindle-whorls were found in some Urartian sites such as Armavir-Blur (*Argištiḫinili*) (Martirosjan 1974: pl. 107), Çavuştepe (*Sarduriḫinili*) (Erzen 1978: fig. 23, pl. XXXV: a-i), Ayanis (*Rusaḫinili Eudurukai*) (Çilingiroğlu and Sağlamtimur 2003: 467) and Anzaf (Belli and Ceylan 2004: 34, see also fig. 6) (Fig. 2). Thus, the spindle-whorls and fragments of a weaving loom found in room No. X in Çavuştepe (Erzen 1978: 39) and Karmir-Blur (Piotrovskii 1969: 156) have been considered as an indicator of weaving workshops in the Urartian state.

The visual arts of the Urartians demonstrate how both men and women wore patterned and ornamented garments. The garments of the women generally go down to the ankles and these garments are decorated with daisy-like rosettes or nested square motifs. The garments of the men have two parts and include an undergarment like a skirt going down to the kneecaps; above this a tunic or over-garment going down to the ankles. The edges of the men's garments are generally finished with tassels. Actual physical data related to the garments used in Urartu are known from the carbonised remains of a long tunic in Karmir-Blur (Piotrovskii 1969: 156) and remains uncovered on the skeletons in the graves of Erzincan-Altıntepe (Özgüç 1969: 6) and Patnos-Dedeli (Öğün 1978: 667ff). More textile evidence was detected on a bench along the wall in room No. 2 in the domestic spaces found during the excavations in the Ayanis Fortress, that was covered with a fabric overlay. Beside this, textile examples in different living areas were also found in the Ayanis Fortress (Çilingiroğlu and Erdem 2010: 4). In addition, the garments of human and winged genies depicted on the walls of the palaces at Erzincan-Altıntepe (Özgüç 1966) and Arin-Berd (*Erebuni*) (Hovhannisian 1973) were painted in blue, red, yellow, black and white colours.

In the booty lists of the Neo-Assyrian king, Sargon II (721-705 BC), during his famous eighth campaign (714 BC) to Muṣaṣir (*Ardini*), the Urartian holy city, states that he seized 130 pieces of bright-coloured woollen clothing, pieces of purple clothing and wool produced for red clothing in the countries of Urartu and Ḫabḫe (ARAB II: no. 213; Thureau-Dangin 1912: 78-81, lines 49-51; duplicating Mayer 2013: 135, line 366). In the booty lists of this campaign, nine ritual garments, the edges of which were attached with *murdû* (line 386),[5] belonging to Urartian rulers, are also mentioned (ARAB II: no. 173; Mayer 2013: 136). In the light of this information, it is also understood that there were special garments worn during rituals by the Urartians. So this evidence confirms the existence of weavers in Urartu, as well as the manufacture of coloured wool/fabric work.

[4] A spindle is a wooden weaving tool that allows for manual wool-spinning; a spindle whorl is the weight that provides the spinning motion.

[5] Mayer 2013: 137: "9 Gewänder seiner Gottheit mit Gürteln aus Gold, Rosetten aus Gold, deren Stickereien (*šibītu*) mit Goldfäden (*murdû*) eingefaßt sind".

Among the findings uncovered in the Urartian-period Armavir-Blur site (Martirosjan 1974: figs. 82/1, 4, 8, 9), Kayalıdere Grave A (Burney 1966: pl. XXV: g), Adilcevaz I Necropolis chamber No 1 (Yıldırım 1989: 78), Liç (Öğün 1978: 674), and the Van-Kalecik Necropolis (Çavuşoğlu and Biber 2008: 192, see also fig. 16: 7), sewing needles used for sewing fabric or clothing were reported (Fig. 3). However, because no names of weaving professions, except for weaving women, were found in Urartian written sources, we can adduce terms defining other weaving professions in the contemporary Neo-Assyrian texts. For example, in Neo-Assyrian texts, titles such as "tailor" (LÚ.TÚG.KA.KÉŠ *ka-š*[*i-ru*]) and "sewing specialist" (LÚ.TÚG.KAL.KAL *mu-ga-bu-u*) are mentioned (Kinnier Wilson 1972: 68). Although no similar professions have been identified in the Urartian written sources, we think that there could also have been such specialist cloth-workers in Urartu just as in Assyria.

We also note the term *mu-ga-bu-u* (= *mukabbû*) mentioned in Neo-Assyrian texts. Although the meaning is not known with certainty, it has been suggested that this term defined the person who applied metal-type embellishments to be worn over clothing (Kinnier Wilson 1972: 68). Appliqué accessories or over-garments were found in graves of princesses in Nimrud, a Neo-Assyrian city, and the same accessories are also seen on the garments on royal reliefs (McIntosh 2005: 262). Some gold, silver and bronze buttons perhaps sewn onto the garment on a male skeleton have been found in an Urartian chamber in Erzinca-Altıntepe. In addition, disc-shaped gold buttons decorated with rosette motifs in granulation technique, and gold sequins adorning the garment have been reported in a sarcophagus of a woman (Özgüç 1969: 22; 1983: 31-33, see also pl. XI: a-c). Similar examples can also be seen on the Adilcevaz-Teişeba relief (Piotrovskii 1967: 64, see also fig. 44) and the garment of the Toprakkale eunuch statuette (Mitchell 1983: 158-159, see also pls. XXXVI/a-b-XXXVIII/a-b). This leads us to conclude that there were also masters in appliqué accessories for clothing in the Urartian civilization, just as in the Neo-Assyrian kingdom. In view of the grave findings and adorned garments on statues and reliefs, the noble class in Urartian society preferred these distinctive clothes.

In summary, the available archaeological data proves that the textile industry played an important role in the Urartian state. It can be concluded that there were various craft branches in the Urartian textile industry.

Builders and Architects

The Urartians built magnificent buildings, mainly on natural hills and compatible with topographic structures. Beside functional buildings such as fortresses (É.GAL) (Zimansky 1985: 62-66) surrounded by huge fortification walls, palaces (Çilingiroğlu 1997: 74-77), temples (*susi*-E.BARA) (Salvini 1979: 575ff), storerooms (*ari*) (Salvini 1969: 7ff), they built civil settlements usually in the form of a 'lower city'. Additionally they built bridges (*qaburzani*) (Çavuşoğlu et al., 2010: 42-50), underground stone-built tombs, canals (*pili*) (Zimansky 1985: 66-69), open-air temples and rock tombs that were formed by carving into natural rock. As construction materials in architecture, stone, mud-

brick and timber were used (Forbes 1983). The depictions of the fortresses on some metal belts dated to the Urartian period (Seidl 2004: 146, see also sm. 2-37), the temple of the god Haldi on the Khorsabad relief (Çilingiroğlu 1997: fig. 36), and a bronze construction model uncovered in Toprakkale (Kleiss 1976: fig. 6), provide us with detailed knowledge about Urartian architecture. These findings are important in forming an opinion about the superstructure and appearance of Urartian buildings that survive only as foundations.

The stonemasons in Urartian architecture used materials that were easily found and in good supply in the area, such as andesite, basalt, limestone, and sandstone. These materials were probably transported to the building area after having been roughly shaped in quarry workshops. In the buildings they were intended for they would have been processed more elaborately. It is understood from the archaeological findings that the Urartian master builders produced works requiring a very intensive labour power and architectural expertise. The best examples that can be said to demonstrate this situation are places such as fortresses, tombs built by carving into natural rock, stores, cisterns, and barns for sacrificial animals (*siršini*) (Salvini 1986: 31ff). All architectural constructions are an indicator of how the Urartian master builders were skillful in stonework.

In some buildings the Urartians used stone or mud-brick up to a certain level and from this level on upwards they used timber. In Armavir-Blur, *in-situ* wall remains made of mud-brick have been found, standing 7.00 m in height and 2.50 m in thickness (Martirosjan 1974: 75). The dimensions of the mud-bricks used in cities in Urartu are very similar. Mud-bricks of about 52 x 35 x 15 cm were used in Karmir-Blur (Piotrovskii 1950: 43), of about 53 x 35 x 14 cm to 53 x 53 x 14 cm in the Adilcevaz-Kef Fortress (Bilgiç and Öğün 1964: 97) and of about 46 x 46 x 12 cm at Bastam (Rusai URU.TUR) (Forbes 1983: 31).

Beside external architecture, the Urartians also produced important works in their internal architecture. The inner walls of some buildings such as Urartian temples and palaces were decorated with some motifs and figures in colours such as red, white, black, and blue (Özgüç 1966; Hovhannisian 1973). Additionally, the floors of some places were inlaid with mosaics (Barnett 1954: 4, 8, see also figs. 2, 8; Çilingiroğlu 2001: 56, see also fig. 18). There are also inscriptions carved on the walls in some buildings such as temples (Erzen 1978: 10; Çilingiroğlu 2001: 52, see also fig. 7). Inlaid decorations in the Ayanis Temple (Çilingiroğlu 2001: 51-60), wall paintings in Erzincan-Altıntepe (Özgüç 1966: 13-60) and Arin-Berd (Hovhannisian 1973: 18ff) indicate that there were some masters who made elaborate internal decorations. So this evidence reveals that similar profession groups such as stonemasons, carpenters, floor-makers, scribes and trimmers worked together for interior architecture works.

Physical evidence of the stonemasons and other craftsmen who made the splendid buildings of the Urartian civilization has been identified at Armavir-Blur. At that place the craftsmen (stonemasons, pottery and metalworking specialists, etc.) who made up the bulk of the population lived alongside the ruling classes in the same area. It has been shown that the areas of the houses varied between 500-700 m² in size and that they had approximately ten rooms. The houses of the ruling class covered an average space of 614 m², enclosed by

a wall, and with an oven, a kitchen, a bathroom, storehouses for different commodities, and an inner hall of about 70 m² in size (Figure 4). Based on this evidence one may conclude that the members of the ruling class in the Urartian state lived in an advanced stage of well being (Salvini 2006: 144).

We learn from Urartian inscriptions that those building professionals among the people who had been brought from other sites, or by forced migration as a result of military campaigns, were employed to build fortresses or other constructions. For example, the temple inscription of the Ayanis Fortress and a bulla of Rusa II uncovered in Bastam indicate this.[6] Piotrovskii believes that captives were also included among the workers together with local craftsmen for building the city of Karmir-Blur (Piotrovskii 1969: 133), while Martirosjan has claimed that captives from Assyria and Mana were used for all of the building activities at Armavir-Blur (Martirosjan 1974: 46ff).

In the light of the written documents of the Urartian period[7] and archaeological data it is clear that there was some form of a standardised plan and architectural tradition behind the building of some constructions such as fortresses, palaces, and especially temples. The temples (*susi*) built in the Urartian sites have a standard form and share very similar dimensions, thus providing the best examples for this situation. It also indicates the existence of a special group of master builders connected to the kingdom.

Some of the tools probably used by architectural masters have been identified as the result of archaeological excavations. The best examples known so far are an iron sledgehammer and a shovel from Toprakkale (Wartke 1990: pl. XXX: a-b), an iron shovel from Ayanis (Çilingiroğlu and Erdem 2007: 130, see also fig. 14), and other iron tools from Armavir-Blur (Martirosjan 1974: 141, see also fig. 87: b) and the Van-Kalecik Necropolis (Çavuşoğlu and Biber 2008: 192, see also figs. 17: 2-3) (Fig. 5). Although we have no evidence in the Urartian written sources of any distinctive name for master builders or architects, the evidence is clear that there were masters of architecture in Urartian society and these professionals followed different lines of business.

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[6] We know from the written sources that the Urartian state supplied a part of its need for labour force in construction activities by mass population transfers. In the temple inscription of the Ayanis Fortress from the time of Rusa II, it is indicated that the people included in the construction of the fortress were brought from specifically named countries: "Rusa, son of Argišti, says: I brought (deported) men women and cattle from the Lulu countries (= the enemy, barbarian countries), from Assur, from Targuni, from Etiuni (Armenia), from Tablani, from Qainaru, from Ḫate (the Neo-Hittite country, like Malatya), from Muški, from Şiluquni (never attested before). I built through(?) people (craftsmen? evidently the deportees) that fortress and the settlements" (Salvini 2001: 261). Beside this, we learn from other written sources that masters of architecture were sometimes brought from another city or a country for working at a specific site. On the bullae of Rusa II uncovered in Bastam, for example, it is stated that carpenters were brought from the city of Bastam (Rusa-i URU.TUR) for the construction of the Toprakkale fortress (Salvini 1988: 130-131, 134-135, no. 3.1.1.1 and 3.1.3).

[7] The expression *"... nothing has been done here before..."* which the Urartian kings mentioned frequently in construction inscriptions shows that they attached great importance to construction activities. This indicates the importance of masters of architecture. Hence, although they were found in different regions, the similarity in features and certain fixed dimensions (cellas of *susi* 5 x 5 etc.) of Urartian fortresses, temples and fortification walls – especially temples – lead us to conclude that these could only be built by a group of master builders and architects connected to the kingdom.

Woodworking

It is known from the written sources that timber was another professional business in Urartu. Thus, some sources also state that the need for building timber constituted some of the problems between the Neo-Assyrian and Urartian states.[8] Building timber was used in Urartian architecture (Forbes 1983) and wood was used for elaborate furniture manufacturing (Merhav 1991a: 246-262). Bronze throne fragments in Toprakkale (Wartke 1990: 30, see also fig. 1), a chair, table and throne, uncovered in the graves in Erzincan-Altıntepe (Özgüç 1969: 24), and a wooden trestle found at Adilcevaz H reef (Seidl 1993: 185, see also fig. 49) represent good examples of functional woodworking made during this period. Metal was placed between wood panels in some places in the furniture fragments uncovered at these sites both for decorative purpose and providing a connection between parts of a complex piece of equipment. Additionally, metal and wood were used together in various weapons, construction materials and agricultural tools. Wood will have also been used for vehicles used in land and river transportation and for some daily-use materials.[9]

Some expressions indicating the profession of a carpenter or other specialists dealing with work in wood are found in the Urartian written sources. For example, on the bulla of Rusa II, the Urartian king (685-645 BC), found in Bastam, the expression LÚ.GIŠ.NAGAR.MEŠ in a section of the text has been translated as "carpenters" (Salvini 1988: 130-131, 134-135, no. 3.1.1.1 and 3.1.3). The bulla records the building of *Rusaḫinili Qilbanikai*, the Toprakkale fortress "before Mt. Qilbani" (the Erek Mountain?).

Diakonoff has stated that the "*garurda* men" (LÚ.GIŠ.*garurda*) (whose numbers were indicated as 20 in the Toprakkale tablet) could be professionals related to producing a tool or pots and pans made of wood (Diakonoff 1989: 99). Salvini, however, has stated that the words LÚ.GIŠ.NAGAR and LÚ.GIŠ.*garurda* were quite close to each other phonetically in the Urartian written sources (Salvini 1988: 135). This term is in the fifth category of personnel list in the Toprakkale tablet, and from the preceding determinative LÚ.GIŠ.*ga-ru-ur-da* is understood to be a profession related to wood, and must therefore be the term for carpenter in the Urartian language.

In the Near and Middle East, there are also some written and visual sources about the profession of carpentry. For example, in the tablets of Assyrian Trade Colonies Period (1900-1750 BC) the term *rabi naggâri* meaning 'head carpenter', is recorded (Sever 1991: 250). Working male carpenters are also depicted on a baked clay relief of Near Eastern origin dated to ca. 1900 BC (Matthews 2000: 456) and on a wall painting of a grave dated approximately to 2500 BC in Egypt (Hodges 1970: 109, see also fig. 98).

In the light of this information, it can be said that the Urartians used wood in architecture, furniture, the production of weapons, fine workmanship (wood carving

[8] Based on information by Neo-Assyrian spies, the Urartian king Argišti II (714-685 BC) took timber together with the rulers of the city of Harda from a place called Eziat (see SLA: no. 6). In a Neo-Assyrian letter, it is mentioned that 470 timber trees were brought to the city of Ura by 160 men coming from different cities through the river (see SLA: no. 109); In another letter of a Neo-Assyrian spy, 500 huge logs cut by the Urartians are mentioned (see ABL: no. 705).

[9] Thus, wooden vessel fragments from Ayanis are known (see Çilingiroğlu and Erdem 2010: 9).

and decoration), vehicles in land and river transportation, and daily equipment. So they benefited from professional groups producing these, and these groups probably produced under the patronage of the state.

Jewellers

Objects used for the purpose of ornamentation have been uncovered mostly in necropolis excavations rather than in Urartian residential areas. Karmir-Blur (Piotrovskii 1967: 53-55), Giriktepe (Balkan 1964: 241), Kayalıdere Grave A (Burney 1966: pl. XXV: c, d, f), Erzincan-Altıntepe (Özgüç 1969: 22; 1983: 33-35), Van-Altıntepe (Ayaz 2006), Van-Kalecik (Çavuşoğlu and Biber 2008: 192, see also fig. 16), and Iğdır Necropolis (Barnett 1963: 178, 181, 185, 195-196, see also figs. 32, 34, 36, 41-43, 44) provide the best examples on this subject. Additionally, there is also jewellery from various provenances, often unknown, that is available for study in various national and international museums and special collections (Zahlhaas 1991: 184-197). The use of jewellery is seen on some figures on bronze statuettes (Seidl 2004: fig. 38: a-c), on the Adilcevaz-Teişeba relief (Piotrovskii 1967: 65, see also fig. 44), on various belts (Kellner 1991: pls. 69: 260-265), and on votive plaques of Urartian origin (Seidl 2004: figs. 122-125, 137-145).

Although not clearly mentioned in the Urartian sources, the existence of silversmiths responsible for producing and cleaning jewellery is known from the texts of the Neo-Babylonian and Cassite periods in Near Eastern civilizations (Oppenheim 1949: 172). For example, in the written sources of Mesopotamia the silversmith is known as *zadim*, and the goldsmith is known as *kudim/kutimmum* (McIntosh 2005: 258). The Urartians had jewellery made of mainly bronze, gold and silver. Among such items bracelets, armlets, rings, beads, necklaces, pectorals, fibulas, amulets, and pins are the most common. As to the Urartian examples, it is thought that there were some professional craftsmen preparing moulds, casting, and performing finer works (ornamentation).

Jewellery has an important role in demonstrating the level of socio-economic development and class differences in the Urartian society. In the light of the archaeological findings, we think that jewellery workshops in the Urartian administrative sites operated for the satisfaction of the ruling class. However, the existence of much jewellery in some public necropolises, such as Dedeli (Öğün 1978: 663-668), Liç (Öğün 1978:672-674), the Iğdır Necropolis (Barnett 1963:178-195), and Adilcevaz H reef (Öğün 1978: pl. CLXIV: 51-52-55, pl. CLXV: 57-59), indicate that private specialist workers produced jewellery by imitating state production. It is clear that some jewellery makers were literate and aware of the various deities adored in Urartu. The best evidence for this is a carnelian bead of the Urartian king Argišti I (786-764 BC) with an inscription on it: "Argišti presented [this] to the goddess Arubani. He brought [it] from [the country] Eriahi" (Dinçol and Kavaklı 1980: 231-234).

Sculptors

The main material of the Urartian sculptures and reliefs in large dimensions is stone, generally andesite, basalt and limestone. Smaller sculptures and relief works were made of bronze and clay. Among the large-scale Urartian sculptures there is a lion protom found around the cemetery area of Gevaş-Celme Hatun (Sevin 1993: 565-567), and three lions protoms found in Van-Garibin Hill (Derin and Sağlamtemur 1998: 15-33). Some embossed and relief works in stone are found on both sides of the main entrances in some Urartian buildings, and the decoration of some walls or pillars. The best examples known of this type of work are the Adilcevaz-Teişeba relief (Burney and Lawson 1958: 213, see also fig. 2; Piotrovskii 1967: 65, see also fig. 44; Seidl 1974: 116-119), and the chariot relief in Van Museum (Bilgiç and Öğün 1964: 87, see also pl. XIX: c).

Several bronze statuettes represent small-scale sculptural work. Generally these have been uncovered as furniture fragments (Merhav 1991b: 278-283), but better known are those attached to cauldrons and representing bullheads or sirens (Merhav 1991c: 226-243). Beside these, there were also probably small statuettes in the form of a god and goddess for religious functions (Seidl 2004: pl. 38/a-c; Çilingiroğlu and Erdem 2010: 25, see also fig. 12; Gökce 2013: 211-217). Although no large-scale bronze statues have been recovered in Urartu, their existence is indicated by their inclusion in Neo-Assyrian booty lists.[10]

Although not clearly mentioned in the Urartian written sources or shown in Urartian art, the inscriptions[11] and the plastic arts[12] of the Neo-Assyrian kingdom, the contemporary of Urartu, show that masters of sculpture and relief formed an occupational group that worked for the state. Thus, although we have no evidence for the specific professions of stonemasons and masters of relief in the Urartian written sources so far, the finds that we have and the Neo-Assyrian booty texts provide evidence for the existence of these specialised craftsmen. As the surviving examples can be identified as products intended for religious or royal purposes, it can be suggested that professional craftsmen making sculpture and relief works in Urartu belonged to a similar state-organised profession as in the contemporary Neo-Assyrian kingdom.

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[10] The Neo-Assyrian king Sargon II states in the information about the plunder recovered from Muṣaṣir that he seized "… four figures of (divine) main gate guardians made of bronze, the protectors of his (temple) gates with a height of 4 cubits, as well as their bases cast in bronze; one statue in praying attitude – on a royal pedestal – of Sarduri, son of Išpuini, king of Urartu – its base cast in bronze; (…) one statue of Rusa with his two riding horses (and) his charioteer as well as their base, cast in bronze, on which was written in self-praise: 'With my two horses and my single charioteer I have won royal rule over Urartu'." (see ARAB II: no. 173; Mayer 2013: 136-139, lines 399-404).

[11] "… We made a sculpture of the potentate based on the sketch I had drawn; they prepared a different kind of sculpture of the king. The king should see (the sculptures) personally and whichever is appropriate should be done. My potentate should pay attention to the hands, the chin (?) and hair. On the statue of the king they had, there is a rod in the front side of the sculpture, its hands rest on the knee. I do not make the work because this is not regarded as appropriate. They will not listen to me if I say something about form (or) other issues…" (see Sevin 2010: 15).

[12] In a scene engraved on bronze plaques made by Shalmanasar III (858-824 BC), for fixing on the door wings of a temple in Balawat, the procession of a king made by a craftsman under the control of a courtier is shown (see Sevin 2010: 14-15, see also fig. 11).

Bone, Horn and Ivory Carving

Although pieces of bone, horn and ivory worked for decorative and other uses have been uncovered at some Urartian period sites, these are not common finds. There are a small number of works made of ivory found in Karmir-Blur (Piotrovskii 1967: 57-61), Toprakkale (Van Loon 1966: 131) and Erzincan-Altıntepe (Özgüç 1969: 42-43). It is known that ivory was brought to Urartu from Northern Syria and Mesopotamia by trade or as a result of military campaigns. We also know that the Urartians processed raw ivory in local workshops.[13] Images representing the tree of life, which had artistic features reflecting Urartian influence, were found in Karmir-Blur and Erzincan-Altıntepe. Examples of rough ivory point to the processing of raw ivory in local workshops (Sağlamtimur 2009: 567).

In Karmir-Blur, remains of horn were found in two rooms. It has been stated that there is some evidence showing that the horns had been cut on a surface (Piotrovskii 1969: 139). Additionally, based on the presence of other horn fragments and a hacksaw, the excavators claimed that this place was a bone-horn processing workshop (Piotrovskii 1969: 139). This situation indicates that there could be workshops and masters of ivory-, bone- and horn-working in other important Urartian sites.

Viticulture

Urartian written sources speak of laying out vineyards and gardens. In fact, the grape (*ḫaluli*) and the planting of vineyards (GIŠ.*uldi* or GIŠ.GEŠTIN) is mentioned frequently in the texts. These texts make it clear that vine cultivation was performed especially as a state investment. The inscriptions of Karahan[14], Armavir-Blur[15], Karataş[16], Çelebibağı[17], Ayanis[18] and Keşişgölü[19] are some of the more important inscriptions about the planting of vineyards. In addition, a rock inscription found in Edremit/Kadembast (Katepa'c) reports how a vineyard was planted in the name of Tariria, perhaps the wife(?) of king Minua (CTU I: no. A 5A-1). This text also shows that vineyards were planted and operated in the names of individuals in Urartu. Another important subject related to vineyard and viticulture in

[13] Özgüç and Hermann claimed that a lion statuette found during excavations of Erzincan-Altıntepe was a North Syrian product, but Akurgal has claimed it was an Assyrian production because of stylistic features (for this discussion, see Muscarella 1980: 186-187).

[14] On a stela of king Minua found in Karahan, the king states that he founded a city (URU) and a fortress and also established a vineyard (^{GIŠ}*uldi*) (CTU II: no. A5-30).

[15] Argišti I, son of the Urartian King Minua, reveals in one of his inscriptions that he had a vineyard laid out near the city that he had founded and named after himself (*Argištihinili*) in Armavir-Blur, as well as a water-channel and an orchard (CTU I: no. A 8-16).

[16] Sarduri II, son of the Urartian King Argišti I, mentions a vineyard that he planted in an inscription found in Karataş near Erciş (CTU I: no. A 9-11).

[17] In an inscription belonging to Argišti II, son of the Urartian King Rusa I, found in the Çelebibağı locality southwest of Erciş, the planting of a vineyard is recorded (CTU I: no. A 11-1).

[18] In an inscription belonging to Rusa II, son of Argišti II, found in Ayanis, the planting of a vineyard is mentioned, as well as many investments, such as a fortress, a temple, a city and an orchard (CTU I: no. A 12-9).

[19] The stela found in Gövelek village near Van is of Rusa III, son of one of the last kings of Urartu Erimena, and mentions the planting of a vineyard as well as the making of a water-channel and orchard (CTU I: no. A 14-1).

Urartu is the animal sacrifice made for the god Haldi and his consort, the goddess Arubani, during the vintage season in autumn (CTU I: no. A5-33).

We encounter some of the names and titles belonging to the people working vineyards at almost every site in Urartu in the written sources. The expression I ME LX VIII LÚ.*e-ši-a-te* in the fifth line in the tablet uncovered in Toprakkale has been translated as "168 palace servants". The expression X LÚ.Ė.TIN.MEŠ-*ni*, appearing among the LÚ.*ešiate* men on the same tablet, has been interpreted as "ten cupbearers or wine manufacturers" (UPD: no. 12, 83 and 93). In addition, the expression LÚ.Ė.TIN ^{m}*šá-ni-e-*[*ḫ*]*i-*[*n*]*i* found on a tablet belonging to the reign of Sarduri III, son of Rusa (645-635 BC), found in Karmir-Blur, has been translated as "viticulturist or son of cupbearer ^{m}*šánie*" (UPD: no. 1).

Further evidence about winemaking in Urartu comes from archaeological excavations, and Karmir-Blur provides the best information on this issue. The existence of a large winery there has been documented as a result of archaeological study (Piotrovskii 1969: 140-153). Based on its findings we conclude that there were wine workshops and manufacturers throughout Urartu. Additionally, many cellars in which wine was stored have been found at several Urartian sites. Wine cellars with capacities of 60-100 thousand litres have been identified at Armavir-Blur (Martirosjan 1974: 138) and eight wine stores in which 40.000 litres of wine could be stored were uncovered at Karmir-Blur. Next to these wine cellars in Karmir-Blur, 1036 red-burnished pots in bright colour and bronze cups were found. There are also 97 bronze bowls on which the names of Minua (810-786 BC), Argišti I (786-764 BC), Sarduri II (764-734 BC) and Rusa I (734-714 BC) can be read; they were found on pithoi in a winery (Piotrovskii 1969: 140-153). These finds demonstrate that terracotta and metal vessels were used during wine offerings for the king or gods.

It is clear from all this evidence that wine was produced by processing grapes from a large amount of vineyards in Urartu in wineries. The wine so produced should have been consumed after being stored. In this instance, vine cultivation, wine production, wine storage and serving wine are different lines of the viticulture business as is indicated by the information provided above.

Brewers

In addition to wine production in Urartu, there is also evidence for making beer. A stone basin for grinding barley grains found in a room uncovered in Karmir-Blur points to beer production (Piotrovskii 1969: 139).

Miners

The development of metallurgy in settlements of Early Iron Age in Eastern Anatolia resulted in a technological leap by which metal manufacturing became a particular characteristic of Urartu. Many metal artefacts found in Urartu have been brought to national and international museums as well as private collectors, through archaeological excavations

and purchases on the antiquities market. All these objects are important in showing how Urartu mined the metal resources in the region in the best way to produce an abundance of metal artefacts.

In Urartu, artefacts made of (mainly) bronze, iron, gold and silver are quite common. Metal working techniques employed in their manufacture included the lost-wax (*cire-perdue*) method, casting, and forgeing. In decorating such artefacts techniques such as engraving, embossing, hemstitch, plating, filigree, and granule work were performed. This shows that, in addition to artefact manufacture, there were craftsmen dealing with the fine decorative workmanship of Urartian metal work. For example, small iron and bronze working pencils in fine workmanship were uncovered in the Van-Anzaf Fortress (Belli 2007: 422-423) and the Ayanis Fortress (Çilingiroğlu and Sağlamtimur 2003: 467) (Fig. 6). The dimensions and types of working pencils found in the Anzaf Fortress are all the same. The heads of the pencils, with square-shaped edges, are bulbous and have acute points. They are 7-7,5 cm in length and 21-25 gr. in weight on average (Belli 2007: 422-423). Most metal objects uncovered were likely produced in workshops that were connected to the Urartian state, as many share similar features of style and form. However, some such artefacts may have been privately produced. Of these, the Giyimli (Hırkanis) votive plaques, with their simple embossed motifs, are the most important group (Erzen 1974: 19ff).

Although there are a large number of artefacts representing Urartian metal work, there is no information in the written sources or the plastic arts relating to who was responsible for producing these. However, archaeological investigations at some Urartian sites have proven the existence of metal workshops. Karmir-Blur provides us with a good example: irregularly shaped bronze ingots ready for being processed were found in the workshops (Piotrovskii 1969: 139). Beside these metal workshops, a workshop producing military equipments was also located at this site (Oganesian 1961: 25). Iron workshops have been uncovered during the excavations of Armavir-Blur, where the remains of a furnace, along with iron dross, bullion remains and heavy hammers, were recorded in one workshop. These dross remains and the furnace (probably an annealing furnace) indicate that the process of iron-ore smelting was performed in this area. Other remains such as a furnace related to bronze casting, and a crucible found in layers dated to the Urartian period at the Metsamor site in Armenia confirm the existence of foundry workshops during the Urartian period (McConchie 2004: 107). Although there could be some workshops in the areas adjacent to mineral sources (Wartke 1991: 324), people involved with bronze metalworking probably lived in the same area as the ruling classes in the larger settlements (Martirosjan 1974: 46ff).

It is known from Near Eastern sources that the person who melted and cast iron was the *simug/nappāhum*, while the person producing metal objects was the *tibira/gurgurrum* (McIntosh 2005: 258). This also shows that there was a division of labour among metal workers. No archaeological evidence confirming the same division between different classes of metalworker has been identified in Urartu so far. However, it seems highly likely that there would have been such a division in Urartu, too.

Potters

Urartian pottery types include bright red burnished and decorated 'palace ceramics', alongside domestic vessels in mainly grey, buff and pink colours, and roughly-made storage vessels. 'Palace ceramics' were discovered at almost all Urartian sites. Beside these, many ceramics of the same type were uncovered in the lower cities and necropolises. The existence of workshops where ceramics were produced is inevitable. The magazine found in Karmir-Blur in which red-burnished ceramics were stored shows that these were produced in royal workshops (Van Loon 1966: 29-37; Çilingiroğlu 1997: 131-135), and other ceramic workshops have been identified (Piotrovskii 1969:139). The processes involved in pottery-making, such as selecting good clay for manufacture, preparing the clay, shaping by hand or using the wheel, burnishing, engraving, decorating with appliqué bull heads, and kiln-firing, all require a level of expertise best found in a workshop. We believe that in such workshops different people were responsible for different parts of the process under the control of a master.[20]

Leather Manufacturers

The written sources of Urartu[21] and Assyria[22] tell us how a great number of bovine animals and sheep were bred in the Urartian state. The Urartian king Minua had an animal barn (*siršini*) built on the northern ridge of Van Castle, with an inscription placed at the entrance stating it was for protecting animals (CTU I: no. A5-68). Many tools made of bone in room No XI. and fragments of a weaving loom in the pillared hall no X. have been uncovered during the excavations in Çavuştepe. Based on these data, it has been suggested by the excavator that these rooms were workshops related to weaving, wool-preparation, or leatherworking (Erzen 1978: 39). Leather, defined by the Sumerogram KUŠ in the Urartian texts, was apparently transferred between the Urartian cities. On a tablet found in Karmir-Blur, mention is made of the leather of 26 cows, 172 sheep and 16 goats that was sent to the city of the "god A" in country Aza (UPD: no. 10).

Ceramic rhytons uncovered during excavations in Karmir-Blur (Piotrovskii 1969: 173) are evidently imitations of long leather boots, hence the conclusion that leather was

[20] A scene of pottery-making on a wall painting of a tomb dated to about 2000 BC in Egypt shows that the various processes such as preparation of clay, shaping the vessel, kiln-drying, etc., were carried out by the people with different professions (see Hodges 1970: 69, see also fig. 53).

[21] In the Meherkapı inscription, there is a list about the sacrifice of dozens of bovines and small ruminants for the Urartian gods (CTU I: no. A3-19). Also there are lots of Urartian texts about animal sacrifice. One of these texts, the Kelişin inscription, reports the sacrifice of 1112 bovines, 9120 sheep and 12480 nanny goats for the god Haldi by Išpuini and his son Minua in the sacred city Muṣaṣir (CTU I: no. A3-11). Additionally, we know from written sources that the Urartian kings also seized animals; tens of thousands as booty during military expeditions. As an example from these lists, the king Argišti I proclaims that he brought 14478 bovine animals and 73770 small ruminants from the countries of *Qada, Ašqalaši* and *Šašilu* during one of his campaigns (CTU I: no. A8-2).

[22] The Neo-Assyrian king Sargon II (721-705 BC) states that he captured 1,285 sheep and 525 cattle from the sacred city Muṣaṣir that belonged to the Urartians (ARAB II: no. 176; Mayer 2013: 141). Again Neo-Assyrian texts convey to us that strong oxes and numerous fleshy sheep were sacrificed during the ascension to the throne of the Urartian kings (ARAB II: no. 171; Mayer 2013: 131, lines 341-342).

used for shoe making. Leather could also be used for producing clothes. Physical evidence for leather working includes awls probably used in leather processing found at the Anzaf Fortresses (Belli and Ceylan 2004: 34, see also fig. 7) and the Van-Kalecik Necropolis (Çavuoğlu and Biber 2008: 192, see also fig. 16) (Fig. 7), while eyelets on the outer edges of metal belts and on horse trappings indicate that leather or fabric was used as undercoat.

There is no term in the Urartian texts to match the term LÚ.*aškappu* or "leatherworker" in the Neo-Assyrian texts (Kinnier Wilson 1972: 3). However, the available data indicates that some members of Urartian society were involved in manufacturing at least shoes and perhaps clothing, also made of leather. It is impossible to say as yet whether the people preparing the leather for processing, providing the leather to be used as clothing, or shoe making, etc., were the same persons, or whether there was a division of labour.

Basket Manufacturers

The remains of baskets uncovered during the excavations in Armavir-Blur (Martirosjan 1974: 108, 167, see also fig. 94) and the Ayanis Fortress (Çilingiroğlu and Erdem 2010: 5) suggest that basket manufacturing was also performed in Urartu. The basket remains in the Ayanis Fortress were found in room No 2. in the area defined as a residential area in the west of the citadel (Çilingiroğlu and Erdem 2010: 5). There is nothing in the written sources or the plastic arts that can be related to basket making or the use of baskets in Urartian society, but a relief in the Southwest Palace in the Neo-Assyrian city Nineveh, contemporaneous with Urartu, shows a woman carrying a basket on her head (Roaf 1996: 130). It seems highly probable that baskets, providing a simple means of carrying products, would have been made in some quantity in Urartu, a society based on animal husbandry and agriculture.

DISCUSSION

One of the main characteristics of civilizations is the occurrence of specialised production, and so specialised or professional producers. It is possible to see evidence for this situation in Urartu. The evidence found shows that the production in Urartu was performed on two levels: as state and as private production. This situation is reflected in Urartian inscriptions. Some Sumerogram titles for people working connected to the state or producing for the state, such as a cupbearer or a wine manufacturer (LÚ.E.TIN), a carpenter (LÚ.GIŠ.NAGAR), a weaving woman (MUNUS.GAD), are recorded. These titles are the titles of producers who appear in limited numbers in the Urartian texts. The fact that the titles of the people working in important lines of business, such as architecture, pottery, jewellery, etc., do not occur in the texts, except for the craft branches mentioned, should result from the official structure and nature of the state inscriptions and their contents. Additionally, we do not know the names or titles of any of the master masons and architects who built the huge fortresses that are such a characteristic feature of the Urartian state.

However, captives that were used in building constructions and carpenters brought from a region outside Urartu (Aluani Ülkesi/Bastam surroundings) are mentioned in the Urartian inscriptions, and so we can understand from this evidence in particular that at least some of the production experts and masters were not from the core region of Urartu.

We believe that there could also have been local masters of production in Urartu responsible for some industries in the region, especially the making of wine, leather, and basketry. But we assume that the people performing the finer embellishments of many Urartian artefacts, such as fresco, intaglio, sculpture-relief, carpenters and architects, could originate from outside of Urartu, probably from Mesopotamia. Additionally, some lines of production, such as textiles, pottery, and jewellery, may have been the responsibility of both state and private enterprises. Did the masters producing for the state also produce for the public? This is unlikely. It is clear that the objects belonging to the state or the ruling classes were elaborately crafted. In contrast, the objects belonging to the common people were processed quite simply and plainly. In this instance, the probability of both groups of work being produced by the same group of master craftsmen seems weak.

There is some evidence for the existence of a hierarchical ranking or a status difference among the manufacturing classes working in connection with the Urartian state. Some professions such as weaving women and accountants in the list of palace personnel of Toprakkale belong to the second, higher category. However, the position of wine manufacturer or cupbearer is reported in the fifth line and the LÚ.GIŠ.*garurda* men, thought to be carpenters, are in the sixth line at the end. The relative positions of these professions on this tablet point to a hierarchical ranking (Diakonoff 1989: 99). In this instance, the higher status of the working people closely connected to the state is obvious. Another important piece of information showing a status difference is the living areas of craftsmen and manufacturers. Craftsmen lived in residences in the same area as the noble classes at Armavir-Blur. This situation is evidence that the masters producing for the state were considered more important than those supplying the lower social stratums such as slaves, villagers, and warriors. Many craftsmen in the ancient Near East lived generally around the king or the temple (McIntosh 2005: 233). This also probably applies to those master craftsmen brought to Urartu after military campaigns. The state built the temple of Iubša at Arin-berd for the population from the Neo-Hittite country, brought to Karmir-Blur during the reign of Rusa II, who were employed in construction work. It is a sign that the state had a lenient approach to the people working for it, and so this situation should also have been reflected in the status of these immigrant masters.

The identification of the places in Urartu where production took place greatly increases our knowledge about master craftsmen. Production centres belonging to public craftsmen were located in the traditional places, in the villages. The workshops or ateliers in which the production was performed for the Urartian state or noble classes are either located in a part of the settlement or fortress or in an area outside the settlement or fortress. During the excavations in Karmir-Blur, wineries were found on the south of the acropolis and workshops for pottery-making and metalworking outside the acropolis. Additionally,

we can say that textile production was also performed in the settlement or fortress connected to the state, just as at Karmir-Blur and Çavuştepe. Clearly, because of the nature of the production process in some working sectors, these centres should be outside the city, for example, the melting of metals at a high temperature, pottery kiln-firing, and stone-working. Where necessary, the processed raw material could then be finished by having the finer workmanship carried out in the workshops and ateliers in the city.

We do not have any direct information regarding specialization and the division of labour in the various professions. However, it is obvious that certain processes require the involvement of more than one master craftsman. For example, some processes, such as picking grapes from vineyard, the preparation of clay for potters, the writing of certain standardised cuneiform phrases about measurements and goods, kiln-firing, etc., would have been performed by the individuals specializing in their own craft. Here a division of labour makes us consider a factory-style production in the state economy of Urartu. There must also have been state officials controlling these masters beside the people working in these production workshops. Additionally, the existence of the state officials who organized the work, supplied requirements for the raw material and regulated the relationship between supply and demand of the state, is inevitable.

A significant question is whether the Urartians took goods needed for the palace from the same workshops as for the temple and the soldiers. The stylistic features of works belonging to these units indicate the same workshops. The functional and artistic standardization in the works in each field, from architecture to jewellery, reflects state care. This situation shows that these production industries worked under the control of the state.

Private people in Urartu probably imitated the production methods and products that were performed under the control of the state. The best evidence for this is to be found in attentive and simple production methods in such fields as architecture, pottery, and metal working from sites away from the Urartian administrative cities. The discoveries made in common Urartian necropolises provide the best examples for this matter.

We can see that there was a gender gap between lines of business in Urartu. Both visual and written data record that there were weaving women, while it can be assumed that women also produced pottery. Men worked in heavy labour tasks such as architecture, metalworking and sculpture, and the people dealing with lumber and carpentry were probably also men. We do not have adequate data to prove that women were involved in decorative art production such as jewellery, fresco, and engraving. However, certain production tasks were shared. For example, men and women worked together in making wine from grapes as well as picking them during vintage season, an important period in religious and economic aspects for Urartu. Although all family members were probably involved in making the traditional products used by the ordinary people, there probably was a more highly organized system of involvement regarding gender, professional skills, and age, in those workshops connected to the state.

Another remarkable issue is technological and artistic competence in the various areas of Urartian manufacture. It is obvious that techniques and decorations foreign to the

region were used especially in productions for the state. Architectural decorations such as fresco, intaglio, inscriptions, and examples of sculpture-relief, reflect the influence of Mesopotamia. This implies that at least some Urartian master craftsmen connected to the state were brought from other countries, and we have already mentioned how Urartian texts describe how various master craftsmen were brought to Urartu after military campaigns.

Conclusion

In spite of its rugged and divided topography, the Urartian state, which imitated the state model of Assyria, managed to prosper for some 250 years. The state demonstrates its success thanks to the craftsmen and manufacturers who produced standardised finished goods in every field, mainly in architecture and art. It is possible to distinguish traces of these craftsmen and manufacturers in the sites that came under state administration. The evidence is that professional groups of females and males were formed for supplying the needs of the administrators and senior bureaucrats living in the centres of the cities. Furthermore, it is clear that some professional groups were especially privileged. Knowledge about these professions stems from a combination of the written sources, archaeological findings, and the plastic arts. According to the available information, craftsmen and manufacturers made an important contribution to the extension and development of the Urartian state.

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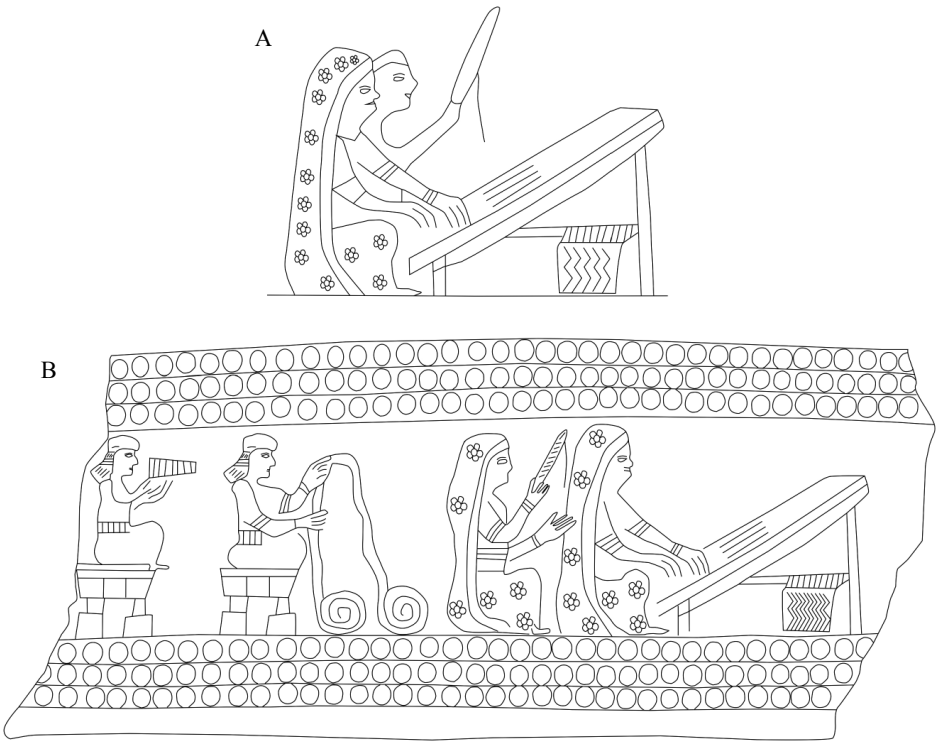

Fig. 1. Women in the textile professions shown on metal belts.
A: Redrawn after Seidl 2004: detail from plate /A3; B: Çavuşoğlu's archive.

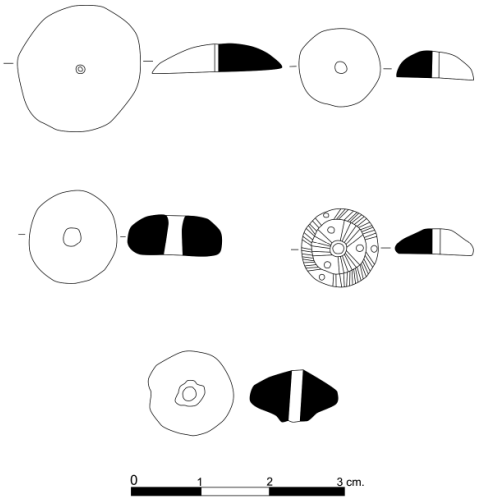

Fig. 2. Spindlewhorls from Çavuştepe (redrawn after Erzen 1978: fig. 23).

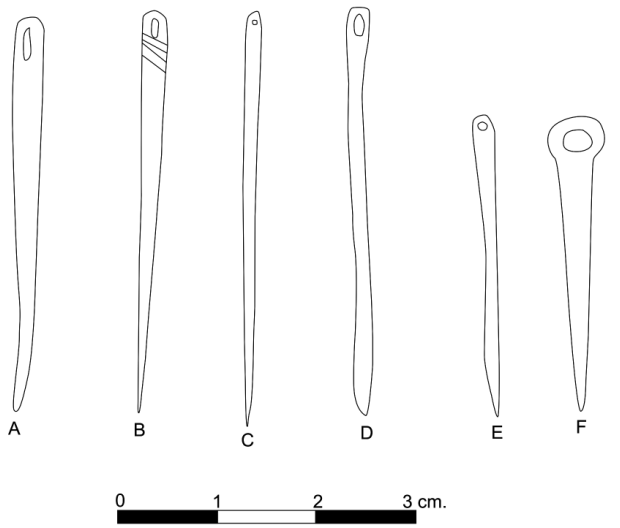

Fig. 3. A-B. Armavir-Blur (redrawn after Martirosjan 1974: fig. 82/1); C. Kayalıdere Grave A (redrawn after Burney 1966: pl. XXV/g); D. Adilcevaz I Necropolis (redrawn after Yıldırım 1989: 78); E. Liç (redrawn after Öğün 1978); F. Van-Kalecik Necropolis (Çavuşoğlu's archive).

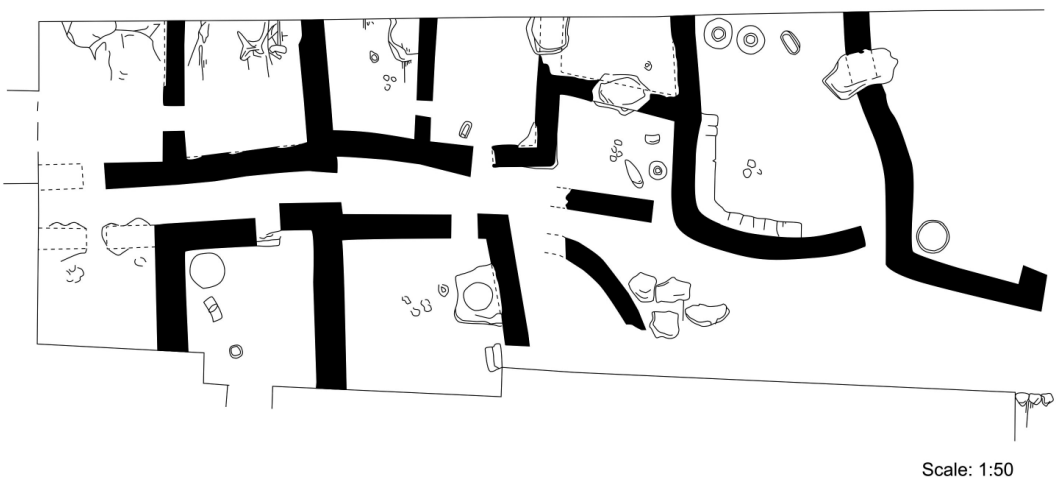

Fig. 4. Living areas of craftsmen from Armavir-Blur (redrawn after Martirosjan 1974: pl. 36/a).

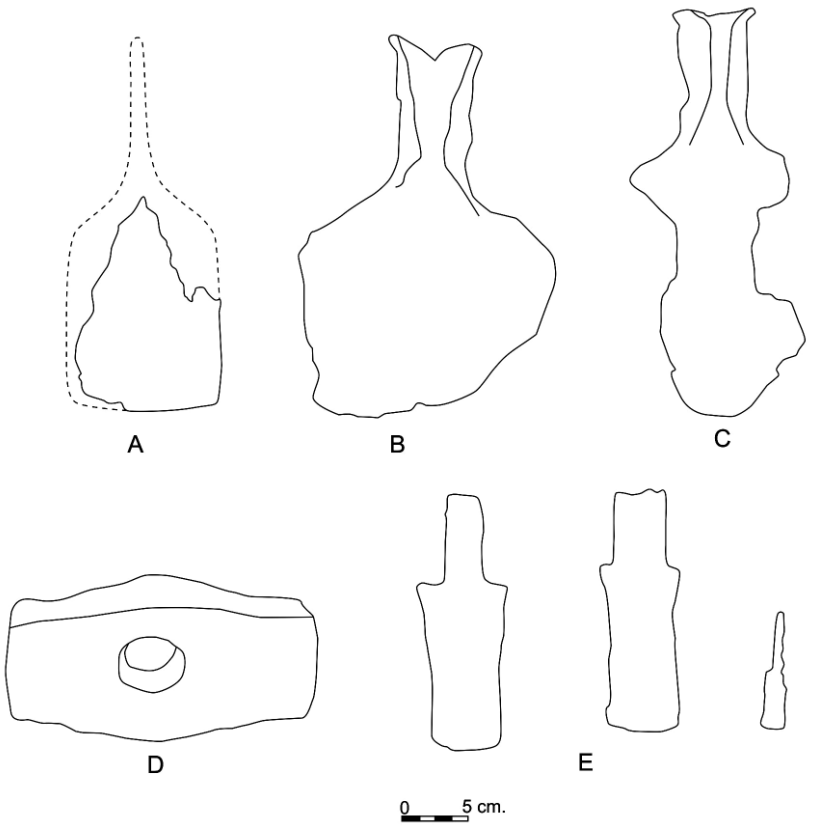

Fig. 5. A. Armavir-Blur (redrawn after Martirosjan 1974: 141); B. Ayanis (redrawn after Çilingiroğlu and Erdem 2007: fig. 14); C-D. Toprakkale (redrawn after Wartke 1990: pl. XXXI a-b); E. Van-Kalecik Necropolis (Çavuşoğlu's archive).

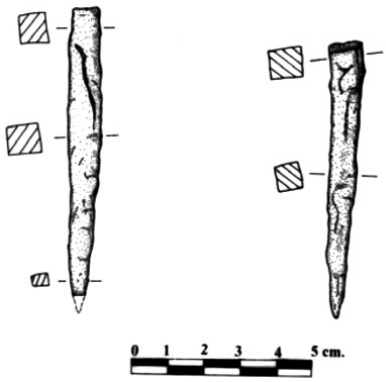

Fig. 6. Small metal-working pencils made of iron and bronze in Van-Anzaf Fortress (Belli 2007: fig. 7).

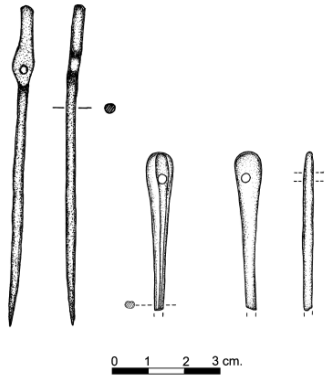

Fig. 7. Awls from Van-Kalecik Necropolis (Çavuşoğlu's archive).

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JOHN GARSTANG AT SIRKELI HÖYÜK, CILICIAN PLAIN, IN 1936-1937. Old Photographs and New Evidence from the Renewed Excavations

*Alexander Ahrens**

Abstract

During the winter of 1936-1937, British archaeologist John Garstang (1876-1956) excavated several trenches at the site of Sirkeli Höyük, located in the Plain of Cilicia (18 km west of modern-day Ceyhan). After a single campaign, however, he left the site and his interest shifted to site of Yumuktepe/Mersin, where he then excavated for a number of years. Apart from two very brief preliminary reports of his excavations at Sirkeli Höyük, which were published in the journal "Annals of Archaeology and Anthropology of the University of Liverpool," not much is known about the trenches and their associated finds. Unpublished photographs kept in the Special Archives of University College London shed new light on the location and orientation of some of Garstang's trenches at the site. Furthermore, in the 2012 campaign of the renewed Turkish-Swiss excavations at the site, a trench was found in the western part of the northern terrace that most probably was excavated by Garstang, but was not mentioned by him in his reports. This hitherto unknown trench may be related to his discovery of a lion-shaped column base made of basalt that is now kept in the collections of the Archaeological Museum of Adana.

Introduction: Garstang's Excavations at Sirkeli Höyük

In the winter of 1936-1937,[1] British archaeologist John Garstang (1876-1956) started excavations at the site of Sirkeli Höyük in the Cilician Plain. These excavations were part of the *Neilson Expedition to Cilicia*, which surveyed a number of archaeological sites in Cilicia, a region located between Anatolia and the Levant that was virtually unknown archaeologically at that time (Garstang 1937; Garstang 1938). The expedition to Cilicia was, in a way, a sort of home coming to the region of Anatolia for Garstang, since in 1906, thirty years earlier, he had already conducted his "Anatolian survey," which in turn led to his seminal work *The Land of the Hittites* (Garstang 1910).

Altogether, according to Garstang's preliminary reports, five trenches (called "cuttings" by him; namely Trenches A-E) were excavated at Sirkeli Höyük (Fig. 1; see also below; see part 2). The two preliminary reports published by Garstang on his excavations at Sirkeli Höyük unfortunately are almost void of detailed information on the trenches as well on the material retrieved from them. Since Garstang wrote these reports after having started excavations at Yumuktepe/Mersin, he noted: "*(i)n the meanwhile, it should be said, a full season's excavations on the mound of Mersin has provided us with a stratified series of Cilician-Hittite pottery of the early Imperial and pre-Imperial periods. We are therefore able to omit from this report all discussion of details and to confine our account to*

* University of Bern (Switzerland), Institute for Archaeological Sciences, Department of Near Eastern Archaeology.

[1] Unfortunately, precise dates for his work at Sirkeli Höyük cannot be given.

observations illustrating the stratigraphy of these mounds (i.e. Sirkeli Höyük and Kazanlı Höyük, an archaeological site in the vicinity of Sirkeli Höyük) *in the light of more recent result*s" (Garstang 1938: 12).

Thus, Garstang presented the results of the excavations at Sirkeli Höyük on a total of only five pages altogether (Garstang 1937: 64; Garstang 1938: 20-23, pls. XIV-XVII), leaving many open questions for later researchers dealing with his excavations at the site. Although Garstang published some of the pottery from these trenches, a detailed account of his excavations and the stratigraphy was never published by him. Garstang's attention also seems to have been primarily concerned with the rock relief of the Hittite king Muwatalli II, located at the steep rock outcrop close to the Ceyhan river, which at the time of Garstang's excavations at the site had not yet been published (Garstang 1937: pls. XVIII-XIX).

Garstang, at least so it seems, was also hoping to find archaeological evidence for the Hittite Imperial period at the site when he opened the trenches. However, since *"(i)n nearly every case remains of the Early Iron Age predominated – indeed, only at a depth of 4 m in cuttings C and E did we get down to levels of the Imperial period*" (Garstang 1938: 20), Garstang left Sirkeli Höyük for Yumuktepe/Mersin shortly after the winter campaign.

PHOTOGRAPHS IN THE SPECIAL ARCHIVES OF THE UNIVERSITY COLLEGE LONDON

Hitherto unpublished photographs taken by John Garstang at the site during the winter campaign of 1936-1937 shed new light on his excavations at Sirkeli Höyük.[2] Of the five trenches Garstang excavated and marked in his preliminary report (A-E), we now have photographic documentation for two of the trenches (Trenches C and D; see below). Additionally, there are three photographs that show different parts of the mound from various viewpoints and in different directions. One additional photograph also shows the upper part of the rock relief of Hittite king Muwatalli II, a detail which has not been published before (Fig. 7).[3] It remains unknown who actually took these pictures, and they – as holds true for various photographs taken during earlier ventures – need not necessarily have been taken by John Garstang himself.

While three of the photographs do not show the actual excavations carried out, they can at least give an impression of the site in 1936.[4] These photographs show the höyük from the south-east during the excavations (Fig. 2),[5] the other two photographs show the north-

[2] The present author was able to locate these photographs in the Special Archives of University College London in February/March 2013 (see below, acknowledgments). For further information on photographs of John Garstang kept at the University of Liverpool, see Greaves 2010.

[3] The reproductions of the photographs published here are digital scans of b/w paper prints. The original negatives were not employed here due to reasons of practicability and treatment.

[4] An even earlier visitor to the region, but apparently not to the site of Sirkeli Höyük, was Max Baron von Oppenheim, who travelled from Hamidiye (now the modern city of Ceyhan) to Adana along the river Ceyhan (Ilan Kal'ase = Yılan Kalesi) in the year 1899. Digital scans of the photographs taken during Oppenheim's journey can be accessed via URL: http://arachne.uni-koeln.de/arachne/index.php (last accessed: 17/1/2014).

[5] Trench C can be seen on the right of the photograph, just to the left of the white tent.

western corner of the lower terrace (Fig. 3) and a view from the summit of the höyük over the low-lying terrace towards the north-west (Fig. 4).

Much more revealing with respect to Garstang's actual excavations at the site are the two other photographs. While one of the photographs shows Garstang's Trench C (Fig. 5), the other shows Trench D (Fig. 6). Both photographs were taken during the actual course of the excavations, as can be clearly deduced by the number of workmen seen inside the trenches.

It is interesting to note here that Garstang actually made a mistake concerning the orientation of Trench D in his sketch plan: While on his plan the trench is clearly oriented in a south-western to north-eastern direction, the photograph (Fig. 6) – as well as the satellite image of the höyük (Fig. 8) – clearly shows that the trench was in fact directed in almost the opposite direction (roughly west-east).

Since Garstang only produced a rough and inaccurate sketch plan of the site and gave no details on the precise location of his trenches, most of his trenches cannot be located with certainty anymore. Furthermore, the trenches opened by later excavators at the site in the immediate vicinity also make it difficult to differentiate between Garstang's trenches A, B and E of 1936-1937 and the more modern ones.[6] Still today, however, Trenches C and D can clearly be seen in the morphology of the höyük (Fig. 8).

A Hitherto Unknown Trench by Garstang at Sirkeli Höyük?

The site of Sirkeli Höyük, one of the biggest settlement mounds in the Plain of Cilicia, has yielded substantial archaeological remains dating from the 4th to the 1st millennium BC. Different occupational levels were already discovered during previous German excavations conducted at the site between the years 1992-1997, and from 2006-2009 (see Hrouda 1997; Ehringhaus 1999; Ahrens et al. 2008; Ahrens et al. 2010). The site consists of a 300 x 350 m^2 höyük. The main mound, which is roughly 40m high, has an oval shape, an adjacent lower terrace in the north of the main mound is located at its northern flank. Additionally, as already assumed, a lower town exists to the south-east of the main mound (Ahrens et al. 2010: 62). As early as 2006, the renewed excavations led to the discovery of a monumental stone building in Area A, located in the north-western corner of the lower terrace ('Building A1'; fig. 9). Although the exact layout, function, and date of this building still remain unknown at the moment, a Late Bronze Age to early/middle Iron Age dating is supported by the Imperial Hittite and Iron Age pottery found on the floor and the filling of the rooms respectively (Ahrens et al. 2010: 59, especially figs. 4-6).

During the campaign of 2012 conducted by the Turkish-Swiss team at Sirkeli Höyük, a large pit that contained a large amount of mixed pottery (dating from the Chalcolithic to the Hellenistic period) as well as a number of seemingly "modern" finds was exposed

[6] A short summary of the history of the excavations after Garstang's first explorations is given in Hrouda 1997: 95-96; see also Ahrens et al. 2008: 71.

in Area A, located in the north-western part of the terrace (Fig. 8). At first, this pit was thought to be a modern intrusion into the latest levels attested in Area A, which date to the Hellenistic period. Upon closer inspection, however, all of the modern material retrieved from this pit turned out to date to ca. 1930. The bulk of the modern material consists of fragmentary objects made of iron, including ca. 200 nails, and even an iron peg (Fig. 10). Additionally, numerous fragments of several glass items were found. Although few of the fragments can be used for a secure typological analysis, the base of what probably was a small bottle (Fig. 11), and the neck of yet another, but different glass bottle, which most probably was used for wine or even champagne, stand out (Fig. 12).[7]

Furthermore, the dimensions of the 'pit,' which measure ca. 8 m x 5 m in total (half of the trench has not been exposed yet, since it is outside of the area investigated), as well as its clear and exact south-north orientation and its location right at the slope of the terrace suggest that this feature is not to be interpreted as a modern pit, but may well be an unknown trench excavated by Garstang during the winter of 1936-1937, even though Garstang did not mark the existence of such a trench in the sketch plan he published in the second preliminary report (Garstang 1938: pl. XIV), nor write anything about such a trench in his report (Figs. 13-14).

Intriguing in this respect, however, is the fact that the find of a double-headed lion column base was apparently made in exactly this area of the höyük (Garstang 1938: pl. XIV, marked '*lion*'; Figs. 1, 15).[8] As Garstang briefly remarked in his report: "*(o)n the north side of the mound stretches out a terrace on which at its extremity was found a stone lion of crude style, which may belong to a late Hittite or even later period. The position of this lion suggests that the terrace is itself ancient, i.e. not due to modern agriculture* (Garstang 1938: 21)."

An identification of the "new" trench in Area A with Garstang's Trench B, located at the northern slope of the lower terrace (Fig. 1), can be excluded with some certainty, since Garstang clearly differentiates between Trench B and the findspot of the column base in his preliminary report (Garstang 1938: 21).

Although it is clearly an open to debate, is it implausible to assume that Garstang actually tried to find out more about the archaeological context of the column base if he indeed found it here? If that was the case, one would expect him to excavate in the area where the column base was found. What cannot be explained in this respect, however, is why he did not mention this trench in his preliminary report. Since it has been demonstrated that at least one of Garstang's other trenches (see part 2, i.e. Trench D) is definitely not positioned correctly on his sketch plan, one may assume that other omissions or mistakes

[7] According to David Whitten (Clarksville/IN), the glass items generally seem to date to ca 1900-1940, based on the production marks and patina of the material. The neck of the bottle is that of a typical wine or champagne bottle ('champagne finish'), most likely made in France. The base mark from a different bottle unfortunately cannot be identified or related to a specific producer at the time of writing, but most likely comes from Europe (D. Whitten, pers. comm. 2/1/2013). The forms found are quite common and remained unchanged for a long period of time; typologically similar vessels were already found in a steamboat that sunk in the United States in 1865, see Switzer 1974.

[8] The base is exhibited in the Archaeological Museum of Adana today.

may have occurred while compiling the notes and drawings for the preliminary reports. Maybe Garstang did not encounter what he was hoping to find, and thus stopped the trench without taking any notes in the field. And as only two of the five trenches excavated at Sirkeli Höyük were photographed, one may also assume that Garstang thus only rarely decided to take photographs of the trenches.[9] One may also speculate that the column base was discovered late into the winter campaign, and that therefore field notes were not taken in the field anymore.

In this regard, it is most interesting to note here that the renewed Turkish-Swiss excavations at Sirkeli Höyük have indeed found a large stone building (see above; 'Building A1' in Area A; fig. 9) in this area. According to the associated pottery found within the fillings of the rooms, it was used from the final phase of the Late Bronze Age until the Middle Iron Age (for details on the building, see Ahrens et al. 2008: 75-83, Abb. 5-10) – an approximate dating that has also been put forward for the column base on stylistic grounds (Hrouda 1997: 95-96, fn. 10; see also pl. 4.4-5) – there may be an actual connection between the find spot of the column base and the building.

What is clear from the stratigraphy is the fact that the 'pit' (Garstang's presumed trench) cuts deep into the foundations of Building A1. Unfortunately, since also Building A1 is not yet fully exposed, and in its southern part is heavily disturbed by later building activities dating to the Hellenistic period, it is impossible to reconstruct a complete layout of the building at the moment (Ahrens et al. 2008: 75-84). Still, one would expect a column base – such as the one apparently found by Garstang here – to have adorned a gateway or to have been part of a monumental entrance to a building of importance. The size and construction technique of Building A1 clearly meets all these standards, but at the time being it is not yet clear where exactly the position of a presumed column base (or even more bases?) might have located within the building's layout.

Taking these 'hints' all in all, Garstang may indeed have found the archaeological context of the column base, but probably did not notice that it was connected to and part of a larger building complex. What led to the deposition of the 'modern' material inside the trench is difficult to tell exactly, but a possible scenario is that the excavated earth – this time along with material used by Garstang and his workmen – got washed back in over time. As one can clearly see on the photographs of his excavations at Sirkeli Höyük (Figs. 5-6), the excavated earth was not removed to a different location on the höyük, but left alongside the edges of his trenches, making it easier and faster for Garstang to reach deeper – and thus older – levels.

[9] Although it has to be mentioned that there is the possibility that parts of Garstang's field notes concerning his excavations at Sirkeli Höyük (including photographs), may have been destroyed during World War II. However, the present author was able to find a booklet prepared by Garstang, which featured photographs sorted by the main sites surveyed and excavated as part of the Neilson Expedition to Cilicia. In the booklet, no other photographs than the ones published here (except for the already published and well-known photographs of the rock relief) were found (and without "blank spots" inside the booklet). This makes it highly likely that other photographs of the excavations at Sirkeli Höyük do not exist. The Special Archives of UCL keep Garstang's field notes of projects conducted after World War I.

What might be an alternative explanation to the suggestion that the pit was an actual trench excavated by Garstang? One could think of activities related to the building of the Baghdad Railway (built from 1903-1940), the tracks of which cut the höyük at its south-western part. However, it does not really seem to make much sense to presume that earthen material, clay, stones or the like used for the construction of the railway was actually taken from an area of the höyük which is far from the tracks. Also, at the time of Garstang's excavations at the site, the tracks of the Baghdad Railway had already been built, as can be seen on his sketch plan (Fig. 1),[10] and if there had been illicit excavation work or looting prior to his exploration, he surely would have mentioned this in his preliminary reports.

The fact that a European wine or even champagne bottle was found in the filling of the pit makes it also highly likely that we are dealing with something out of the ordinary – at least in connection with the region around Sirkeli Höyük.

SUMMARY

Although many questions still remain unanswered – and can most probably never be answered with certainty –, it can be presumed on the basis of the present evidence that Garstang did in fact excavate a trench in the north-western part of the terrace. This trench, although not indicated on his sketch plan of 1937, may be related to his finding of the double-headed lion column base made of basalt in this part of the höyük, its find spot being indicated with '*lion*' on Garstang's sketch plan of the site (Fig. 1).

It can well be surmised that Garstang – leaving aside the unknown circumstances of how and where exactly the column base was found by him (e.g. lying on the ground, half-buried in the ground, etc.) – decided to investigate the context of the column base and to see if there were further similar remains nearby.[11] The large stone building used during the later part of the Late Bronze and the first half of the Iron Age ('Building A1') found in the course of the renewed Turkish-Swiss excavations may be linked to the column base, which is now kept in the Archaeological Museum of Adana. Unfortunately, however, definite archaeological proof for such a connection is still lacking. Would there indeed be a connection of the column base with the stone building discovered in Area A, one would expect the building to be a rather representative complex, with the column base most probably being part of an entrance gate into the building.

[10] This part of the Baghdad Railway indeed had already been finished before World War I. Would the pit date to this period, the material retrieved from the filling of the pit would not seem to correspond to this date. However, it has to be admitted that the glass finds cannot be dated with such an precision.

[11] It is odd that Garstang apperently did not take a photograph of the column base and its findspot (should it have been seen above ground, after all), given the fact that he took various photographs of the site and even of the northern terrace prior to his excavations of Trench E there.

Acknowledgments

For help while searching the archives and also for the kind permission to publish Garstang's photographs for the first time, I have to thank Ian Carroll and Dan Mitchell of the Special Archives of University College London. Needless to say, the photographs are reproduced thanks to the courtesy of the Institute of Archaeology of UCL. Furthermore, Sanna Aro-Valjus (Helsinki) is to be thanked for the fruitful discussions we had at Sirkeli Höyük while she was visiting the site, and for giving helpful 'directions' that subsequently led to the "rediscovery" of these photographs in London. David Whitten (Clarksville/IN, *www.glassbottlemarks.com*) gave many helpful comments on the dating and origin of the glass finds. The pictures of the finds from the trench discovered in 2012 were taken by Laura Simons (Tübingen). Archaeological work in Area A was supervised by the present author, Zora Grossen (Bern), and Selim Yıldız (then Çanakkale, now Ankara). Michael Roaf (Munich/Oxford) is to be thanked for reading the English manuscript and giving comments on an earlier draft of the paper. Mirko Novák (Bern) also gave important hints and useful remarks while writing this article. Last, but not least, I would like to thank Corina Steiner and Jonathan Gerber (both Bern) for help with the preparation of the figures.

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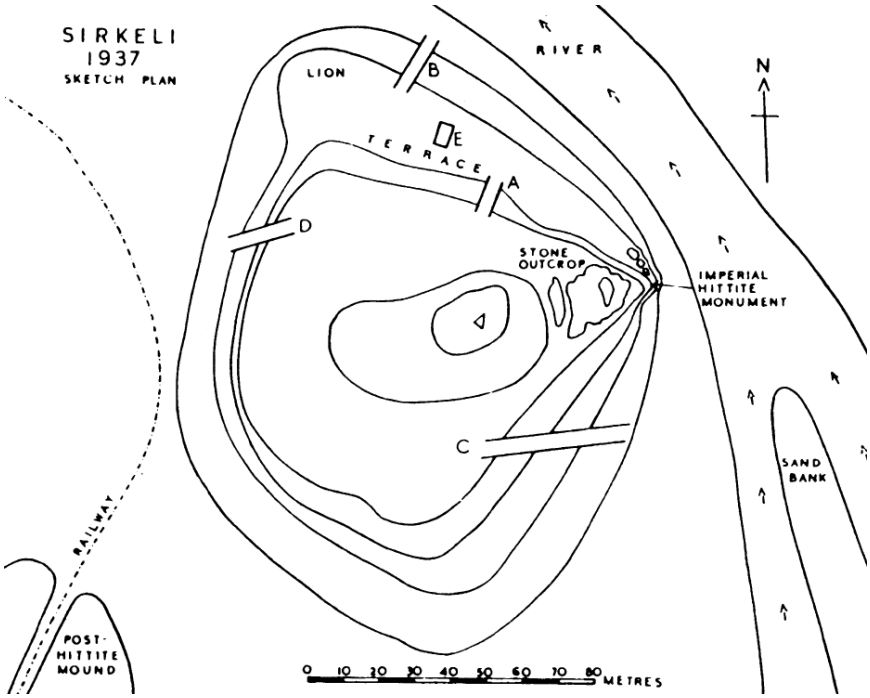

Fig. 1. Sketch plan of Sirkeli Höyük by John Garstang with the position of his five trenches (A-E), the find spot of the double-headed lion column base (marked 'lion'), and the location of the rock relief of Hittite king Muwatalli II (after Garstang 1938: pl. XIV).

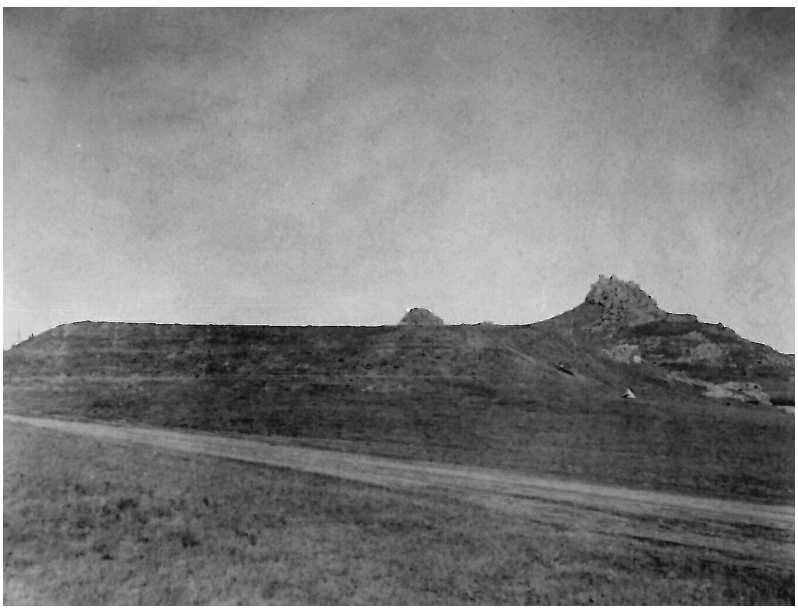

Fig. 2. Sirkeli Höyük from the south-east in 1936-1937 (courtesy of the Institute of Archaeology of UCL).

Fig. 3. The western flank of the main mound and the lower terrace of the höyük in 1936-1937, from the south-west looking towards the north-west (courtesy of the Institute of Archaeology of UCL).

Fig. 4. The lower terrace seen from the summit of the höyük, looking towards the north-west (courtesy of the Institute of Archaeology of UCL).

Fig. 5. Trench C during excavation in 1936-1937, seen from the south-west (courtesy of the Institute of Archaeology of UCL).

Fig. 6. Trench D during excavation in 1936-1937, seen from the north-east (courtesy of the Institute of Archaeology of UCL).

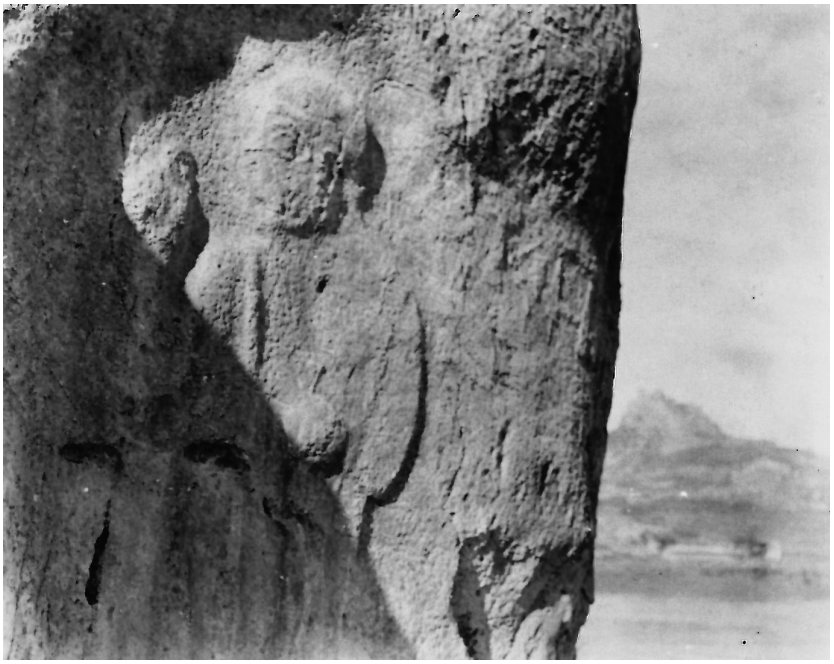

Fig. 7. Relief of the Hittite king Muwatalli II at Sirkeli Höyük in 1936-1937 (courtesy of the Institute of Archaeology of UCL).

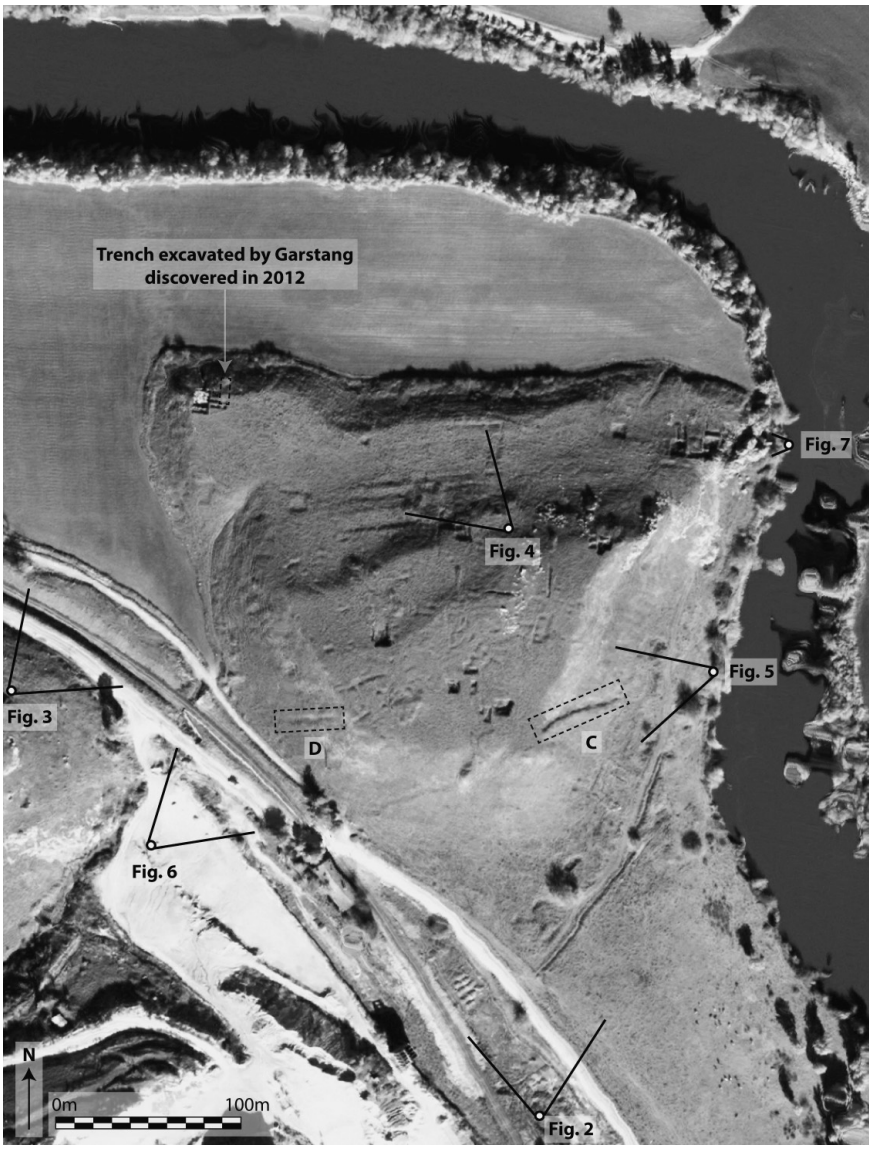

Fig. 8. Satellite image of Sirkeli Höyük with the possible location of Garstang's trenches (when possible), the viewpoints and angles of the photographs, as well as the location of the newly discovered trench in Area A (WorldView-1 satellite image [0,5 m data coverage]).

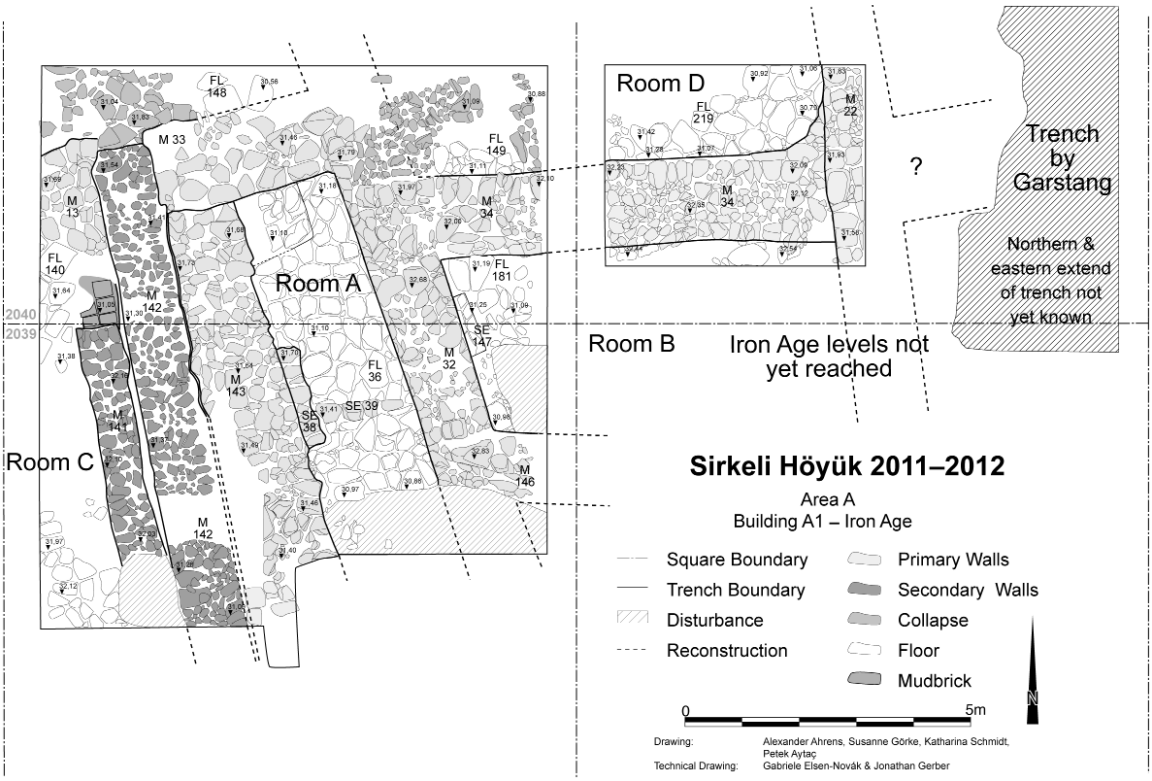

Fig. 9. Building A1 dating to the end of the Late Bronze Age-early/middle Iron Age with the location of Garstang's trench (courtesy of the Sirkeli Höyük Excavation Project).

Fig. 10. Iron peg from the trench (photo: Laura Simons; courtesy of the Sirkeli Höyük Excavation Project).

Fig. 11. Base of a glass bottle with base mark from the trench (photo: Laura Simons; courtesy of the Sirkeli Höyük Excavation Project).

Fig. 12. Neck of a glass bottle with distinctive 'champagne finish' from the trench (photo: Laura Simons; courtesy of the Sirkeli Höyük Excavation Project).

Fig. 13. Photo of the eastern section through Garstang's trench in Area A; at the bottom right are wall remains of Building A1 (photo: Alexander Ahrens; courtesy of the Sirkeli Höyük Excavation Project).

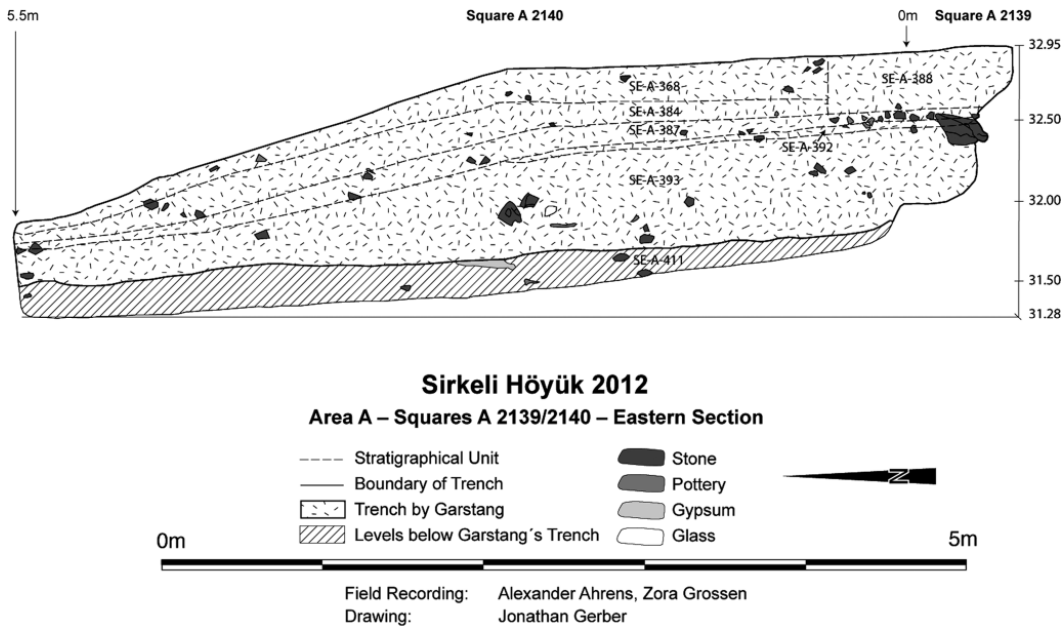

Fig. 14. Drawing of the eastern section through Garstang's trench in Area A (drawing: Alexander Ahrens; Zora Grossen; Jonathan Gerber).

Fig. 15. Column base in the form of two lions made of basalt, kept in the Archaeological Museum of Adana; approximate height: ca. 50 cm; width: ca. 70 cm, depth: ca. 50 cm (photo: Alexander Ahrens).

ANATOLICA XL, 2014

A NEW HIEROGLYPHIC LUWIAN INSCRIPTION FROM HATAY

A. Dinçol[*]*, B. Dinçol, J.D. Hawkins and H. Peker*

In Memoriam Ali Dinçol

Abstract

In 2006 a report was brought to the late professor Ali Dinçol of the discovery of a new Hieroglyphic Luwian inscription on the bank of the Orontes river in the village of Demirköprü (formerly, Jisr el Hadid), Hatay province. A visit by Professor Ali Dinçol with Profesor Belkıs Dinçol and Dr. Hasan Peker revealed a basalt block in the form of a base, bearing on two preserved sides parts of one and two lines inscription. They worked on the text in 2006 and again in 2009, and prepared the piece for removal to the Hatay Museum. A preliminary publication is offered here in collaboration with Professor J.D. Hawkins. The text as preserved concerns the father of the author of the inscription and the erection of a memorial statue to him, probably on this base itself.

JISR EL HADID 4

Object details

Location

In the garden of a house in the Demirköprü village, to be taken to the Hatay Museum.

Description

The base was originally a rectangular basalt block, measuring 103 cm in length, 70 cm in width and 40 cm in height. On its top there is a square shaft hole measuring 40 x 40 cm with a depth of 20 cm to mount a stele or statue on it. Two side are partially preserved (A, D), two lost (B, C). The preserved sides bear an inscription: A, one line dextroverse; D, two lines dextroverse-sinistroverse, sense continuous. From this it is clear that the corner D-A formed the left edge-right edge of the inscription, thus that this part of the inscription began with A left side, line 1 running dextroverse, continuing on the lost B1-C1, preserved on D1 descending to D2, then running sinistroverse to end somewhere on C2-B2. A1 left side is not the beginning of a text but a continuation: clearly it ran on from an element, probably a stele or a statue, which was originally fixed in the visible shaft hole. The village Demirköprü is the find spot of three other inscribed fragments (= JISR EL HADID frags.

[*] Shortly after completing this paper (as well as forthcoming publications of ARSUZ 1-2, KARKAMIŠ New Stele KH.11.O.400, and other works) Professor Ali Dinçol passed away.

1-3), which in 1935 and 1937 were bought from the villagers by the American excavation team working at Tell Tayinat and transported to Chicago. Hawkins suggested that these fragments and possibly also the fragment from TULEIL 1 could belong to the same inscribed monument, a stele or an orthostat, of at least eight lines estimated measurements 70 x 60 x 20 cm, without direct joins with each other. We compared these fragments with the new one (JISR EL HADID 4) to determine whether they could all be parts of the same monument consisting of a stele and a base, but saw immediately that the reconstructed stele could not fit the base, since the width of the shaft hole is twice as big (i.e. 40 cm) as the thickness of the stele (i.e. 20 cm), and since the signs used on the base and fragments show different forms. For example, for the signs L.35 na and L.29 ta different forms were preferred on JISR EL HADID frags. 1-3 and JISR EL HADID 4.

Preserved dimensions of inscription:
(side A), line length, 54 cm., line height, 6 cm.;
(side D) line length, 88 cm., line heights, 6 and 5.5 cm.

Condition: fair

Script, line-divider: relief

Sign-forms: cursive (one monumental á, ta)

Pecularities: PRAE+i; na

Word-dividers: occasional

Discovery

In addition to the previously found fragments of Hieroglyphic Luwian inscriptions at Demirköprü = Jisr el-Hadid, we were informed of the existence of a fourth inscribed stone in 2006 on the bank of the Orontes by Prof. Dr. Erhan Altunel from the Department of Geological Sciences at the University of Osmangazi (Eskişehir), who studied the geomorphology of the region. We are very grateful for the collaboration of the former Director of the Museum Faruk Kılınç, and the museum assistant Demet Kara.

On our visit in August of the same year, the stone turned out to be the base of a stele or a statue, unfortunately damaged by unknown persons with blows of sledge hammer (in the hope of finding gold in it). The documentation was completed in April 2006 and latex squeezes were made, then in October 2009 the inscription was collated and checked, and detailed photographs were taken. Necessary official arrangements were made for the transportation of the stone which was being kept in the garden of a house in the village, to the Hatay Museum.

Publication, Edition

Here for the first time.

Content of the text

(A) Brother and sister, relation with father(?); (D) offerings of animals to Storm-God, also to father's statue... The author gives his own name as *Runtapi* and his father's apparently as *Sami(ya)*. Cf. content of JISR EL HADID 1 ("my father and my brothers"), 2 ("my father...").

Date

Probably 8th century BC.

Line drawing

Traced from stone by Ali Dinçol, Belkıs Dinçol and Hasan Peker: fig. 5.

Photographs

Taken by Ali Dinçol and Hasan Peker in Demirköprü, in 2006 and 2009: figs. 1-4.

Transliteration

A §1. [lost element above] ||(base, A) *x x-ia-ta*
§2. *á-mi-ha-wa/i* |FRATER-*la-i-na* (FEMINA.MANUS.FEMINA)*na-na-tara/i-ha* |PUGNUS-*ri*+*i-ta*
§3. [ ]-*i(-)*[ ]-*wa/i(-)*[ ]-*s*[*a*]x[...
[B+C, lost]

D 1. §1. [... ...]*x-x-ta*
§2. |*á-mu-pa-wa/i-na* CERVUS+*RA/I-ta-pi-sá á-pi-si-na* COR-*tara/i-i-na i-zi-i-ha*
§3. *wa/i-na á-pi-sa-za tá-ti-za* DEUS-*na-za* COR-*ni-i-na* <*wa/i?->li-nu-u-ha*
2. §4. ("VIA")*ha*+*ra/i-w*[*a/i*]-*ta-z*[*a*] ||-*pa-wa/i-tu-ta za-a* X-*ha*
§5. (DEUS)TONITRUS-*ti-i* 1 ARIES/OVIS-*ni-sa* |("X.X")*ku-wa/i-za-i*
§6. POST+*RA/I-ta-pa-wa/i* "1" BOS(ANIMAL) |1 GAZELLA(ANIMAL) CRUS+X-*i*
§7. *a-mi-pa-wa/i tá-ti* PRAE+*i sà-mi-ia-sa-na* STATUA-*r*[*u*]-*t*[*i* [...

Translation

A §1. [...] he/they […]ed
§2. and he/they raised my brother and sister.
§3. ...
[B+C, lost]

D 1. §1. [... ...]ed,
§2. but I, Runtapi, made him (as) his image,
§3. and for his fathers' gods I exalted him (as) an image,

2. §4. and for the travellers I …ed this for him:
§5. for Tarhunta one ram will always *KUWAZA*,
§6. and afterwards one ox (and) one gazelle will stand.
§7. And before my father Sami(ya)'s statue […

Commentary

Side A

FRATER-*la-i-na*: further attestation of form in *-la-i-* against that in *-la-*; see commentary on ALEPPO 2, §3. But for new interpretation as FRATER.*LA-* (*LA* as phonetic indicator), see Yakubovich, 2010, 387.

(FEMINA.MANUS.FEMINA)*na-na-tara/i-*: logogram already recognized determining *tuwatri-*, "daughter" (TELL AHMAR 1, §§24, 29), where FEMINA.MANUS.FEMINA = FILIA, as VIR_2.MANUS.VIR2 = FILIUS, "son" (Empire MANUS+VIR_2 = FILIUS, MANUS+FEMINA = FILIA). The only previous attestation of Hier. Luw. "sister" is written (FEMINA)*na-na-sa5+ra/i-* (MARAŞ 6, §1) =Cun. Luw. adj. *nanasri(ya)-* (logogram NIN): see Melchert, 1993, 154; Kloekhorst, 2008, 601. Is the clear writing with *-tara/i-* here an error, or should a phonetic explanation be sought?

Side D

§2. CERVUS2+*RA/I-ta-pi-sá*: surely to be taken as the PN of the author, *Runtapi(ya)s*, "given by the Stag-God", for which we may compare (DEUS)CERVUS2+*RA/I-ti-ia-sa*, the Stag-God Runtiyas (TELL TAYINAT 2, frag. 10a-b, §i, showing strikingly similar form of the "antler" sign) The only remaining question is the function of the *+RA/I*: whether it aberrantly signals *ru*, or what.

á-pi-si-na: a new appearance of *api-*, by-form of the usual *apa-*, "that", for which see TELL TAYINAT 2, l.1, frag. 2, §ii, commentary. The by-form occurring only in inscriptions of Amuq and Hama, where *apa-* is not found, may be a regional peculiarity. See further *apisanza* (dat. pl.), following §3.

COR-*tara/i-i-na*, *atrin*: see recently Yakubovich, 2002, pp. 194-197; Hawkins, forthcoming, CRRAI LVII. The structure of the clause is clear: "I, myself, made him (as) his ATRI". This may help to elucidate the much discussed *atri-*, for which the basic sense "soul, person, self" is established, but other attestations including this one seem to point to an extension to "likeness, image".

Who is "him" ? The context as understandable suggests that it might be the speaker's father, who appears in §7 apparently in the form a statue. Could this also be his ATRI?

§3. COR-*ni-i-na*: this form alternating with the usual COR-*tara/i-* has already been seen in KULULU 4 §§4 and 9, where the context points most obviously to the meaning "soul". Here we must suppose the same reference as COR-*tara/i-* in §2.

<*wa/i->*li*^{l}*-nu-u-ha* (*li* reversed): since no verb *linu-* is known, and *waliyanu-*, "exalt" always occurs with *atri-* as object (MARAŞ 4, §§ 11,15; TELL AHMAR 5, §§ 12, 15, as emended Hawkins, 2006, p. 27 f.; TELL AHMAR 6, § 14– Hawkins, 2006 pp. 14 f., 24 f.), this restoration is indicated.

Again the structure is clear, the sense less so: "For his fathers' gods I exalted him (as) the ATNI". The *atrin* of §2 and *atnin* as §3 must surely refer to the same image.

§4. ("VIA")*hara/i-w*[*a/i*]*-ta-z*[*a*]: adequately clear attestation of *harwa(n)t-* (see also TELL TAYINAT 2, l. 2 frags. 6 and 7), extended form of *harwa-*, "road" (Hawkins, 2006, p. 23), which yielded the abstract *harwa(n)tahi-*, "travelling" (KARKAMIŠ A15b, §21). The present context now requires consideration of the significance of the suffix *-a(n)t-*. (The following was elucidated in discussion with Mark Weeden). If the abstract in *-ahit-* is correctly interpreted from its context as "travelling", it should point to the existence of a form *harwa(n)t-*, "traveller", which may readily be understood as an *-ant-* participle of an unattested verb **harwai-*, "travel", denominative of the base form *harwa-*, "road". Here, where "on the roads" gives no obvious sense, "to the travellers" suggests a wider understanding of the context. This has been the making and honouring of the *atri-/atni-*, "soul, image" (of the father (?)), and later breaks off with "before my father Samiya's statue ...". We have supposed that this monument was the base of such a statue and now we may further suggest that it stood on a road, perhaps near the river-crossing at Jisr el-Hadid (Demirköprü), where it was found. The inscription would draw the attention of passers-by ("travellers") to the offerings instituted for the storm-god and the statue.

X-*ha*: the sign X resembles but is not obviously the same as L.303 (for which see now Hawkins, 2010, pp. 171-176), for which a reading *sari* was established. This value is regarded as unexplained: the sign appears to be a ligature of the "seal" (L.327, sa_5) and the "leg" (L.82). Mark Weeden suggests that "leg" is a rebus for *ari*, "stand", a Luw. cognate of Hitt. *ar-* (for which see KARKAMIŠ A11a, §§5, 10, and commentary), giving a ligature sa_5+*ari*, *sari*.

If X is indeed a form of L.303, *sari*, this would give a verb *sari-ha*, which would require further elucidation. The general sense appears to be establishing the following offerings to the Storm-God on behalf of "him" "for the (information of) the travellers/ passers by".

§5. 1 ARIES/OVIS-*ni-sa*: not the usual word for "sheep" (*hawi-*) and also not usual sign but perhaps from the logogram's pictorial content one might guess a "ram", phonetic complement *-ni*, thus perhaps transliterate logogram L.110 ARIES (ANCOZ 8 §3 also could be considered as $ARIES_2$, representation of the full body of a ram).

("X.X")*ku-wa/i-za-i*: cf. ANCOZ 1, §3 (to several gods) 1 GAZELLA(ANIMAL)-*sa* ($CORNU_2$)*ku-wa/i-i* (not *-ha*!), "one gazelle will KUWA": the two similar contexts show a verb *kuwa(za)-*, to which sacrificial animal stands as subject. The determing logogram on ANCOZ 1 looks like a reversed (backward pointing) horn (L.108), while that on JISR EL HADID 4 appears to be made up of two elements the upper similar to L.69, lower perhaps

FLAMMAE(?) (L.477). The sign L.69, a form of MANUS, determines various verbs: (-)*iti*-, "delete", *harza*-, "have(?)", *lala*-, "take", *sa(sa)*-, "let", *tarawi*-, "provide" – see CHLI, pp. 67, 545, 360. $CORNU_2$ and FLAMMAE are similar shaped signs, though the latter is double. Neither of these logograms assist in interpreting the verb. The sense can only be guessed, but the context is clearly sacrificial.

§6. CRUS(+X)-*i*: what the +X is or adds to the meaning is unclear. For the form of CRUS(+X), cf. (DEUS)CRUS(+X)+*MI*, ANCOZ 9 §2.

§7. *sà-mi-ia-sa-na* STATUA-*r*[*u*]-*t*[*i*], "Sami(ya)'s statue" (dat. sg.): the possessive adjective *-asi*- shows its regular dat. sg. form in *-asan*; *Samiyasi*-, "that of Sami(ya)", *Samiyasan*, "to that of Sami(ya)".

Conclusion

This fragment of inscription is tantalizing, touching as it does on some common themes of Hieroglyphic Luwian inscriptions. The block is clearly a base to support a monument, and it preserves only parts of the end of an inscription which must have been written mainly on the lost upper element. Reference to author's father's statue (§7) immediately recalls the well attested practice of the setting up by individuals of memorial statues of themselves or often of their fathers, which were intended to receive offerings. One early reference to such from the time of the Hittite Empire is that Suppiluliuma II, who placed a statue of his father Tudhaliya IV in a mortuary chapel (^{NA_4}*hekur*) and inscribed it with his "deeds" (K*Bo* 12.38 ii 4-21). From Iron Age Karkemish we have reference to a statue set up by Suhi II for himself, which was to receive offerings of sheep and bread (KARKAMIŠ A1a, §§ 29-33), and fragments of the colossal statue were found nearby together with its double-lion base. This monument when complete would have closely resembled the uninscribed statue and base found at Zincirli but clearly executed in a Karkemish workshop. An example of such a colossal statue with inscription survives as the fragment MARAŞ 4. The best preserved example is that of the Zincirli figure of Panammu II, set up and inscribed by his son Bar-Rakib in Aramaic but in the old Hittite tradition.

The fragmentary text of JISR EL HADID 4 suggests a comparable monument, in which a statue, probably that mentioned in §7, was erected on the base and inscribed by a certain Runtapi as a memorial to his father Sami(ya). The status or office of neither father nor son is recorded in the text as preserved. Besides the explicit term "statue" (STATUA-*ru-ti* / *taruti*), the term *atri-/atni*-, literally "self, person" but used in the extended sense of "form, likeness, image" (§§2, 3), probably also refers to the memorial statue. The Storm God Tarhunta is to receive a ram, and in future an ox and a gazelle (§§5, 6), and the text breaks off with the father's statue, which would doubtless have received its own offerings.

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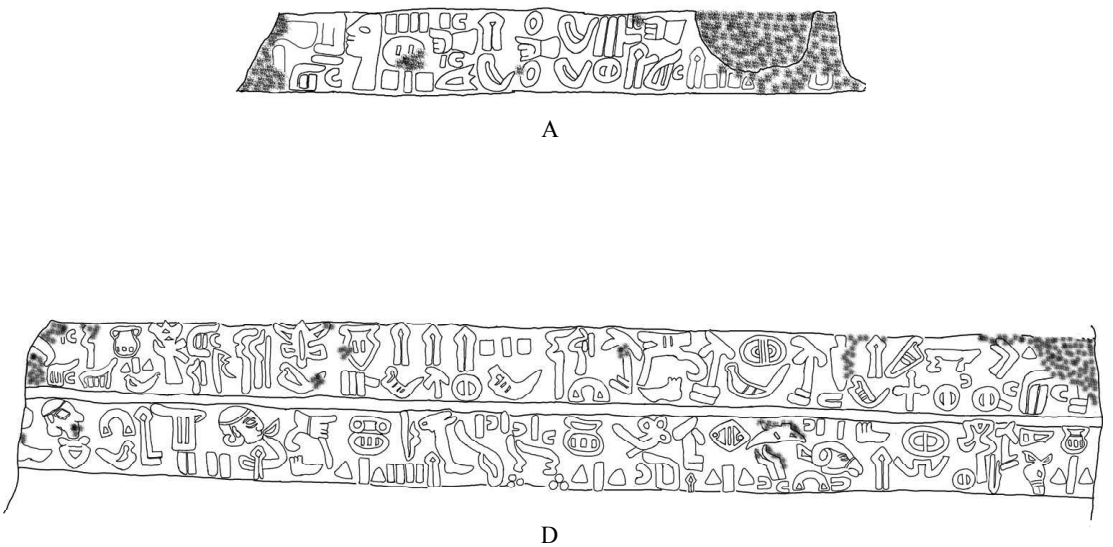
Fig. 1. Statue base bearing fragment JISR EL HADID 4, view from top.

Fig. 2. Front of statue base, JISR EL HADID 4, A.

Fig. 2. Side of statue base, JISR EL HADID 4, D.

Fig. 3. Front and side of statue base, JISR EL HADID 4, A and D.

Fig. 4. Back and side of statue base, JISR EL HADID 4, B and C.



A

D

Fig. 5. JISR EL HADID 4, line drawing (Ali Dinçol, Belkıs Dinçol and Hasan Peker).

Anatolica XL, 2014

THE LOWER GÖKSU ARCHAEOLOGICAL SALVAGE SURVEY PROJECT: Preliminary results of the first season

Tevfik Emre Şerifoğlu, Naoíse MacSweeney, and Carlo Colantoni[*]

Abstract

This article presents the results of the 2013 survey season which was conducted along the Göksu River Valley in the Mersin Province of Southern Turkey. The project was initiated to document as many archaeological sites as possible before the valley is flooded, due to the planned construction of the Kayraktepe Dam in 2016. The two-week season enabled us to discover several unknown sites and further investigate known sites that will be submerged under the dam lake. This year's work mainly focused on the alluvial plains where the Ermenek Çay and the Kurtsuyu Rivers join the Göksu River. The discovery of a pre-Classical settlement at Damtepe and the presence of a Chalcolithic level at Attepe were the most significant discoveries of the season.

A brief summary of the field season is provided here including sections about the investigated sites and a discussion about local settlement patterns. The 2013 season of this Bitlis Eren University project, which is conducted in collaboration with the University of Leicester, was funded by the British Institute of Archaeology at Ankara. We hope to continue surveying this important area in 2014, as throughout history the Göksu Valley was one of the main routes linking the Mediterranean coast to the Central Anatolian Plateau. We may also consider starting excavations at one or two major sites in the coming years, if the necessary funding is provided by the General Directorate of State Hydraulic Works of Turkey.

Introduction

The Göksu River Valley lies in the Mersin Province of Turkey, in the area which was known as Rough Cilicia in antiquity. It runs between the Central Anatolian Plateau and the Mediterranean Sea, and as such is a natural channel of communication between interior and coast (Fig. 1). That the river valley was an important channel of communication throughout history is reflected in its rich archaeological record. From the spectacular ruins of the early Byzantine monastery of Alahan to the Hittite-style rock relief known as the 'Çolakkız' at Keben, the Göksu River Valley is a landscape rich in both historical resonance and archaeological remains.

The lower part of the Göksu Valley is scheduled to be flooded in September 2018 with the construction of a dam at Kayraktepe, approximately 10 km northwest of the town of Silifke (ancient Seleucia ad Calycadnum). The Kayraktepe Dam Project will bring new development to the region, but one unavoidable consequence will be that several known archaeological sites will be completely or partially submerged, including Kilise Tepe, Çingentepe, Maltepe, Örentepe and Attepe. In addition to the loss of these known sites, an unknown number of other sites and monuments, as yet undiscovered, will be lost beneath

* Bitlis Eren University and the University of Leicester.

the waters of the dam lake. In response to this, the Lower Göksu Archaeological Salvage Survey Project (LGASSP) was established in 2013. The aim of the project is to document as much as possible of this unique archaeological landscape before the area is flooded, preserving knowledge of the archaeological record, if not the record itself, for posterity.

Background to the Project and Previous Research in the Göksu Valley

The archaeological significance of the Göksu Valley has long been established (Fig. 2). The Byzantine and Medieval standing remains in the valley were documented as early as the start of the nineteenth century, with the monastery at Alahan being lavishly described by Count de Laborde in the 1838 publication of his Voyage d'Asie Mineure (Laborde 1838: 123-126). But while the work of early antiquarians demonstrated the significance of the valley in classical and later antiquity, it was not until the mid-twentieth century that the importance of the valley during earlier periods was recognized. This recognition came following the earliest official survey of the region, conducted in 1951-2 by James Mellaart. Mellaart included the Göksu Valley in his wider survey of pre-Classical archaeology in southern Turkey, and remarked at the time that the valley was especially rich in remains (Mellaart 1954: 177). In particular, Mellaart found evidence for Chalcolithic and Early Bronze Age activity in the valley, and traced links between the material culture found in the Göksu area and that found in coastal Cilica, the Konya plain, and southwestern Anatolia (Mellaart 1954). Around the same period the Byzantine monastery at Alahan began to be excavated by Michael and Mary Gough, with work continuing until 1968 (Gough 1968; MacKay 1971; Gough and Gough 1985).

Mellaart's work formed the basis for a second survey of the valley a decade later, undertaken by David French. French set out explicitly to investigate the valley's role as a conduit between the societies of the Anatolian plateau on the Konya Plain, and those of the coast around Mersin and Tarsus (French 1965: 177). French's more detailed survey established the locations of several höyük sites with pre-Classical material, and identified two apparent gaps in the ceramic sequence of the valley – the Middle Bronze Age and the Iron Age (French 1965: 186). These apparent patterns in the material, it was suggested, required further investigation, with detailed and intensive work necessary before any firm conclusions could be drawn.

Intensive investigation was indeed undertaken some time later, in the form of excavations, which were directed by J. Nicholas Postgate in collaboration with the Silifke Museum, at the multi-period mound of Kilise Tepe in the years 1994-8 (Postgate and Thomas 2007a), and again in 2007-12 (Jackson and Postgate 2009, 2010 and 2011). Kilise Tepe is located south of the town of Mut, near the village of Kışla and close to the main Karaman-Silifke road. This work has been vital in establishing a ceramic sequence for the Göksu area, and for understanding the long-term settlement history of the valley. It has also given us an insight into the Göksu River, not just as a channel of communication between the plateau and the sea, but also as a dynamic and complex region in its own right.

Indeed, the remains at Kilise Tepe now offer a window through which to view the history of settlement in the Göksu valley as a whole. Chalcolithic sherds have been collected from the mound's surface, although no Chalcolithic levels could be identified during the excavations, and several levels of Early Bronze Age occupation have been unearthed, establishing activity at the site during EB I, II and III (Level V; see Seffen 2007 and Şerifoğlu 2012). There seems to have been a substantial amount of continuity into the Middle Bronze Age (Level VI), although the architectural remains from this period are scant (Postgate 2007a; Jackson, Postgate and Şerifoğlu 2013: 6-7). The Late Bronze Age is better represented (Level III), with the site undergoing several architectural phases. Excavation has in particular focused on a large multi-roomed building in the NW area of the mound, which was associated with Hittite material culture and administrative practices (Blakeney 2007; Postgate 2007b; Jackson and Postgate 2011: 424-425; Jackson, Postgate and Şerifoğlu 2013: 7-8).

The transition from the Bronze to the Iron Age is also known from the site (Level IIa-c), with the previous administrative building succeeded by the 'Stele Building', constructed on a new alignment but fulfilling similar functions to its predecessor (Postgate and Thomas 2007b; Jackson and Postgate 2011: 425-426). Occupation seems to have continued in the Iron Age (Level IId-k), as represented by numerous storage pits, surfaces, partial traces of mudbrick and stone architecture, and the remains of what appears to be a large roundhouse (Jackson and Postgate 2011: 426-429; Jackson, Postgate and Şerifoğlu 2013: 8-9). Following the Iron Age, there may have been a gap in occupation at Kilise Tepe, as the Classical period is represented by a few unstratified sherds and the Hellenistic by disturbed and scrappy levels (Jackson, Postgate and Şerifoğlu 2013: 10). The final phase of the site is the Byzantine period (Level I), during which the stone church was built that has given the site its name (Kilise Tepe means 'church mound'; Jackson 2007a). In addition to the church, domestic settlement was also uncovered across the mound (Jackson 2007b and c; Jackson and Postgate 2011: 429-430; Jackson, Postgate and Şerifoğlu 2013: 9-10). To date, Kilise Tepe remains the only site which has been excavated in the region.

Whilst work was ongoing at the multi-period mound of Kilise Tepe, detailed investigations and survey work was also being undertaken in the upper reaches of the Göksu Valley under Hugh Elton and James Newhard (Elton 2008). From 2002 until 2007, this project documented the settlement patterns and archaeological remains in the upper valley area (north of the town of Mut). Intensive fieldwalking in the area of Alahan village yielded sherd scatters from the Hellenistic, early Roman, and late Roman or Byzantine periods (Elton et al. 2006: 306). The site was thereby established as a substantial settlement, as opposed to an isolated religious outpost (Elton et al. 2006, 305-306; Elton 2006: 332-334; Elton 2008: 240-242), and a number of standing structures of the Roman and Byzantine period were documented, to include those in Alahan cemetery (Elton et al. 2006: 308-309). More extensive survey work also confirmed the presence of Bronze and Iron Age material at sites in the upper river valley (Elton 2006: 332; Elton 2008: 238-239), and some lithic material which has been dated to the Middle Paleolithic period (Elton 2008: 238).

The richness of the archaeological record in the Göksu River Valley, therefore, has been amply demonstrated by previous research. The Lower Göksu Archaeological Salvage Survey Project seeks to build upon this work, using the information from these earlier projects to put our own discoveries into context. Our project, however, has specific aims – to focus in particular on the areas which will be flooded by the Kayraktepe dam in 2018, and to document the archaeological remains in this flood zone as fully as possible. The area scheduled to be flooded lies between the modern towns of Mut and Silifke, and stretches over 75 km along the length of the Göksu River itself covering an area of approximately 200 km^2 (Fig. 3).The project is conducted by a mixed team of scholars from the Universities of Bitlis Eren and Leicester. The official director of the project is Dr. Tevfik Emre Şerifoğlu, and Dr. Naoíse Mac Sweeney is the co-director.

The first season of our project was conducted between 30th September and 13th October 2013, after receiving the necessary permit from the General Directorate of Cultural Assets and Museums. The government representative was Yasemin Zenger from the Silifke Museum, who participated in the fieldwork at every level with great enthusiasm, and Bengi Başak Selvi was the field assistant. Dr. Carlo Colantoni is the GIS expert and the creator of the maps (Figs. 1-4), and Nazlı Evrim Şerifoğlu is the illustrator and photographer of the project (Figs. 5-19). Unfortunately, the project co-director Naoíse Mac Sweeney could not join the fieldwork this year because of health issues.

METHODOLOGY

A two-phase methodological approach was adopted for the project. The first phase consisted of visits to potential archaeological sites, whose candidacy was determined using satellite images and topographical maps. These locations were chosen based on the local topography, nearby water sources and the proximity to modern settlements. Unfortunately, because of the rough topography of this region and the tendency of the ancient inhabitants to settle on top of natural ridges, which makes it hard to differentiate a natural hill from a mound, the level of success was relatively low. Of numerous locations that were visited, only eight yielded archaeological remains. In addition to this, almost all of these sites and features were from the Byzantine and Medieval periods except one multi-period mound, which was inhabited from the Early Bronze Age until the Byzantine period with interruptions.

At and around each site candidate, our team randomly walked to spot finds and remains to check whether the location had anything archaeological or not. The diagnostic sherds that were found were recorded by drawing and photographing, and architectural features were only photographed. GPS points were taken at locations with archaeological remains and these were marked on maps.

Intensive, systematic surveys conducted on and around the previously discovered settlements was the second phase of the fieldwork. Mound type settlements including

Çingentepe, Attepe, Görmüttepe and Maltepe were chosen for this work. All these mounds are located in two alluvial plains within the valley, which were formed by the silt brought by the rivers and streams and one located where the Kurtsuyu River and the other where the Ermenek River joins the Göksu. Almost all the ancient settlements located within the valley were typically built on natural hills or ridges, and interestingly, usually not on the very top of these but on their slopes. The summits and slopes of these mounds were divided into two or more transects, each of which were systematically walked and all the diagnostic sherds that were encountered were drawn and photographed. At Çingentepe an even more intensive approach was adopted and the eastern slope of the mound was divided into 2m by 2m grids. Sherds in each grid were counted, and once again diagnostic sherds were drawn and photographed.

Pre-Classical Sites (Fig. 4)

The only pre-Classical settlement that was discovered using the remote-sensing based extensive methodology was Damtepe, which was probably the most exciting discovery of the season (Fig. 5). This multi-period mound is located close to the village of Evkafçitliği, on top of a natural hill just near the deep canyon formed by the Göksu River at this location. The pottery from the site has shown that Damtepe was first settled at the end of the Early Bronze Age and was inhabited, probably with interruptions, until the Byzantine period. Especially, one combed ware sherd, which has good parallels from Kilise Tepe, was useful for dating the early beginnings of this settlement (Fig. 6; Baker et al. 1995: Fig. 19.5; Postgate and Thomas 2007: Fig. 377.396). This site, which is the southernmost pre-classical settlement discovered in the Göksu Valley, will not be flooded by the dam lake but it was understood that it may be partially destroyed by the new highway that will be built here.

The other two pre-Classical sites investigated in 2013 had been discovered earlier by James Mellaart and David French during their visits to and surveys in this area. Amongst these Attepe is located where the Ermenek Çay joins the Göksu River, and Çingentepe is located where the Kurtsuyu Çay joins the Göksu River.

The most interesting one of these mounds proved to be Attepe, as a number of sherds that might belong to the Chalcolithic period were found during our intensive surveys here (Fig. 7; French 1965: 180). The concerned sherds were painted with black, dark brown or reddish brown coloured wavy lines and cross-hatchings on a cream surface, the closest parallels for which can be found at the Early and Middle Chalcolithic levels of Tarsus in the Cilician plain and Can Hasan in south central Anatolia, although it should be noted that our sherds seem to be a bit more similar to the Tarsus examples (Fig. 8; Goldman 1956: Fig. 219-220, 223, 341.13, 341.L; French 1962: Fig. 5, 7, 9; 1963: Fig. 7; 1966: fig:5-6; 1968: Fig. 2). If we have identified these sherds correctly, this makes Attepe the earliest known settlement of the Göksu Valley. A piece belonging to a red-cross bowl dated to the end of the Early Bronze Age and the base of a red-lustrous ware libation arm from the Late Bronze Age were other important finds, which were valuable chronological indicators, and have close parallels from Kilise Tepe (Fig. 9; Fig. 10; Baker et al. 1995: Fig. 12.8, 17.1, 19.5;

Postgate and Thomas 2007: Fig. 384.525, 384.529-530, 386.561-562). The mound seems to have been inhabited until the Byzantine period with interruptions and there was probably a military post built on top of it which was connected to the Byzantine town located 300m to the west of the mound.

Another pre-classical settlement in the vicinity of Attepe is Örentepe. This site, first discovered and briefly surveyed by David French, was not visited by our team in 2013 as it will not be flooded by the dam lake (French 1965: 180). However, we plan to conduct an intensive survey on and around the mound in 2014 as the settlement may provide important information about the cultural history of this part of the valley.

The settlement at Çingentepe is the southern neighbour of Kilise Tepe (discussed above), and this mound is located very close to the southern banks of the Göksu River (Fig. 11; French 1965: 180). Based on the finds, which were collected from the transects and the 2m by 2m grids, it was understood that the site was settled from the Early Bronze Age until the Medieval period (Fig. 12). A sherd belonging to a red burnished ware bowl from the Early Bronze Age II period, which was painted with white coloured cross-hatchings, was one of the interesting finds as it has an almost identical parallel from Kilise Tepe (Fig. 13; Postgate and Thomas 2007: Fig. 369.220). The remains of a fortification wall or a defensive structure of some sort, which was built on top of the mound, is just visible on the surface of the summit.

This mound was badly damaged by illegal excavations and the eastern slope was almost completely demolished by heavy machinery in order to expand the nearby agricultural field. The sections of the robber trenches and the demolished eastern slope have been useful in that they offer us an idea about the archaeological stratigraphy at the site. These sections were carefully observed and photographed, and sherds from different layers were recorded and studied. In general terms, the pottery traditions show great similarities to what is known from Kilise Tepe, and this is a clear sign of close relations with that site and can be seen as evidence for the existence of a shared local culture.

Classical and Post-Classical Sites (Fig. 4)

Almost all the settlements and architectural remains found during the extensive remote-sensing based survey phase of our fieldwork were from the Classical and post-Classical periods. One interesting discovery was the remains of a Classical period building, located relatively close to the mound of Görmüttepe, of which only a small number of stone architectural features survived, including capitals and columns (Fig. 14). This was the only Classical period structure that we came across in 2013.

Of the site candidates that were visited, two in the vicinity of the village of Köselerli, and one in the vicinity of Hisar were understood to be modestly-sized Byzantine farmsteads. All these sites were located on top of low hills, which were aligned along streams, and contained only small numbers of sherds. These settlements are good indications of the

changing socio-economic system in the region during this period, when people settled at small settlements across the valley.

In addition to these farmsteads, a medium-sized Byzantine town was discovered close to the village of Mirahor, not far from the multi-period mound of Attepe. The town was built on top of a natural rise, and its extent can be traced in the high density of the sherd scatters. Unfortunately, none of the sherds that were found here were diagnostic pieces, but the fabrics of these predominantly coarse ware sherds allowed us to date them to the late Roman or Byzantine period. As mentioned earlier, there was probably a military post on top of the mound of Attepe itself, which would have guarded this settlement.

Görmüttepe, which we initially misidentified as Örentepe, is located just across Attepe on the other side of the Göksu River (Fig. 15; French 1965: 181). Our work on this site has shown that the mound was probably first settled during the Classical period (which is also supported by the existence of the remains of the Classical period building in its vicinity mentioned above), and inhabited until the Byzantine period. Several Byzantine building features were found during our work at the site including pillars, lintels and numerous tiles (Fig. 16). Like Attepe, there was probably a military post built on top of this mound. The pottery scatters across the fields just near the mound of Görmüttepe allowed us to spot yet another Byzantine town here, which was probably attached to the nearby Byzantine military post.

Some interesting post-Classical architectural remains that we encountered during our surveys along the Göksu River Valley include the walls of a Medieval fortification wall, probably belonging to a castle, at a location very close to the village of Karahacılı (Fig. 17), and a bridge which was built on a stream just below the mound of Maltepe (Fig. 18). Maltepe is located close to the village of Anamurlu and the walls of a Byzantine or Medieval castle built on top of the mound are still visible today (Fig. 19). These walls were partially destroyed by illegal excavations conducted here and only a few sherds could be found on top of the mound, which all belong to large storage vessels.

THE SETTLEMENT PATTERNS

The survey area, as previously mentioned, covers approximately 200 km2 along the length of the lower Göksu River Valley. The area under investigation in this project presently ends at the mouth of the Göksu gorge, which opens out onto the flat plain of the river's delta to its east.

It should be noted that the Göksu is a fast flowing river. It rises at two separate sources in the Taurus mountains to the north and west (the river Ermenek) forming a confluence just to the south of the modern town of Mut. A further tributary, the Kurtsuyu, joins the Göksu 15 km or so to the southwest of Mut. Between these two points, the lower Göksu River Valley opens into a broad, flat valley floor of agriculturally fertile alluvial soil. This area formed the focus of the 2013 survey season's work.

This broad valley floor allows the Göksu to change course and meander within the confines of the steep limestone sides of the valley. This characteristic, in all likelihood, played a role in determining the siting of settlements; all of which are at elevations above possible flooding and areas of marshy land and, as discussed earlier, tend to be on small hills on the valley floor or along the valley sides. Most of the terrain of the valley lies below the 325m topographic contour (Postgate and Thomas 2007a: 9). Settlements are also located in side valleys, off the main-stem Göksu valley. Unsurprisingly, settlements are predominantly located in close proximity to a perennial water source; whether a spring, a feeder stream, a tributary or the Göksu river itself. A number of sites are located near to springs – for example, Kilisetepe, Örentepe, and possibly Çingentepe (French 1965:180)-, where remnants of water-management (two tracts of canals) have been recorded. Probably dating to the post-Medieval period, they were identified in the vicinity of Evkaf Höyük (Damtepe) and Anamurlu. Emerging from its flanks, the valley has a number of springs – presumably reflecting a spring horizon – along its length. The valley is agriculturally fertile, verdant in the spring with sufficient rainfall for reliable crops, although with low rainfall in the summer months (Postgate and Thomas 2007a: 9). The valley sides are an agriculturally marginal zone with poor soil coverage, yet the area was known for olive and wine production in the late Roman period, and many stone presses have been recorded (Elton 2005: 336; Postgate and Thomas 2007a: 10). In the modern era, it is a mixed agricultural landscape with wheat, olives and market gardens on the valley sides and orchards on the valley floor. Water can be drawn from the Göksu, making this a productive and appealing location for ancient settlements.

The river valley lies in the Mut basin, deeply trenched by the Göksu, and is characterised by a number of fluvial terraces (Elton 2005: 336). These are distinguishable as steep scarps and valley sides of conglomerate overlying roughly a sequence of clastic sediments, sandstone, and limestone sloping down to the valley floor, with small hills and conglomerate-capped bluffs and promontories (Maden Tetkik ve Aram Genel Müdürlüğü 2002; Elton 2005: 335-336; Şafak et al. 2005;). The stratified limestone, exposed and easily accessible, is the predominant local construction material supplying limestone blocks used for wall foundations and footings through all periods, as evident from excavations at Kilise Tepe (Postgate and Thomas 2007a; Jackson, Postgate and Şerifoğlu 2013).

Site Identification

As already mentioned, the identification of archaeological sites by the sole use of satellite imagery (a combination of Bing, SPOT and CORONA) has not been as fruitful as initially hoped. Sites are often placed on hills ridges and promontories making them in most cases very difficult to distinguish from the natural topography. Compounding these difficulties, as noted by Elton (2005: 336), the friable nature of the limestone leads to scree covering the hillsides and obscuring potential site candidates. There are plans in the 2014 LGASSP survey season to pay special attention on the ground to the relationship between settlements, springs and perennial water sources, as a means of locating small sites that are difficult to identify solely employing remote sensing techniques.

Preliminary survey results

A total of 17 sites, monuments and structures were recorded during the autumn 2013 survey season. A number of these sites have been noted in previous surveys (see above). Site numbers according to chronological period and a list of site names are shown in table 1. Figure 4 shows all of the sites and features recorded in 2013, with 'pre-Classical' and 'Classical and post-Classical' settlements indicated . Man-made features include a bridge (Maltepe), canals and a rock relief (Keben). The outline surrounding the valley floor in the same figure represents the predicted extent of the scheduled dam's lake waters and the chevron symbol, in the direction towards Silifke, is the planned location for the hydro-electric dam itself.

Expanding on the discussion above of the 'pre-Classical' and 'Classical and post-Classical' settlement patterns, site distributions will be described in more detail.

The first season's work concentrated on the upper part of the Lower Göksu River Valley and fertile plains (see Figs. 2 & 3). The results have produced insights into the occupation in this sector of the valley and potential settlement patterns along the entire valley. Although further research is necessary to establish a sufficiently large dataset to begin drawing anything other than simple inferences from the settlement distribution pattern, a few tentative insights into local settlement trends can be made.

The earliest occupation in this part of the valley dates to the Chalcolithic with the site of Attepe. Small amounts of ceramics dating to this period have also been recovered at Kilise Tepe (see above). It may be the case that the later occupational overburden on multi-period sites, especially those with a Bronze Age component, may be obscuring traces of Chalcolithic occupation at other sites along the valley.

The Bronze Age sees the first peak in occupation in this part of the valley with 5 sites recorded in the survey. Preliminary dating of collected ceramics suggests that these Bronze Age sites tended to be settled, perhaps without interruption, from the Early through to the Late Bronze Age. They also share a number of common traits: being prominently located on natural hills and in the most agriculturally fertile areas of the valley; they were mounded and multi-period; and where abandoned, reused in later periods. In fact, all but one Bronze Age site has later Byzantine occupation. All are less than 2 hectares in size, although the extent of occupation in each period is still to be established.

There then follows reduced settlement numbers in the Iron Age, Hellenistic and Roman periods (see table 1). The most prominent settlement in this part of the valley during these periods was the continued occupation at Kilise Tepe (Postgate and Thomas 2007a: 34-35). Notably, Kilise Tepe most probably possessed a local administrative function from at least the first half of the Late Bronze through to the beginning of the Iron Age, and may have been of continued significance in later periods (Postgate 2007b: 142; Jackson and Postgate 2010: 424-425; Jackson, Postgate and Şerifoğlu 2012: 7-8).

On initial inspection, this sector of the valley during the Iron Age through Roman periods appears virtually deserted, although this could be misleading and there may have

of existed small, yet so far hard to identify, settlements ranged above the valley floor. The Göksu Archaeological Project (GAP) directed by Hugh Elton (2005; 2008), which undertook a systematic intensive survey of the Upper Göksu Valley, recorded just under a dozen sites with probable Roman to late Roman occupation. These "Roman sites spanned most of the available ecosystems, ranging from the valley floor at c. 200 m above sea level to over 1300 m" (Elton 2008: 245). Furthermore, the low level of Roman period occupation along the Lower Göksu Valley is surprising especially when taken against the backdrop of the Roman period centres of Mut (*Claudiopolis*) and the port at Silifke (*Seleucia ad Calycadnum*) at the northwestern and southeastern ends of the lower valley, respectively.

The second peak in settlement numbers belongs to the late Roman-Byzantine period, which has the highest number of sites (11) recorded in the survey so far. Continuity in settlement location re-use is suggested by the fact that four of these sites had previously been occupied in the Bronze Age, and it is their well-placed locations and access to water sources that presumably ensured the popularity of these locales. Five of the recorded Byzantine sites were new foundations: those sites occupied from the Byzantine period onwards are usually located on valley slopes, having moved from the valley floor possibly due to environmental or socio-economic factors.

The Byzantine period settlement pattern in the survey area is complicated by a mix of settlement types, with a number of predominantly religious (Christian) sites in or close to the valley, such as the church and associated settlement at Kilise Tepe (see above), fortifications at Akkale and Maltepe, and the small rural communities (an estimated 80% of settlement numbers) that presumably played a supporting role. It is also worth noting that close to the northern edge of the survey area and overlooking the Göksu valley are the early Byzantine Alahan Monastery and cave-church of Aloda. A testament to the religiously complex landscape to the north of the LGASSP survey area is the fact that Elton (2008: 245) recorded 12 churches during the GAP survey.

From the end of the Byzantine period, there began a slow decline in the survey area's settlement numbers during the Islamic/Medieval and post-Medieval periods (see table 1). Continuity in settlement occupation is visible with 5 out of the 6 Islamic/Medieval period sites having been previously occupied in the Byzantine period. Occupation persisted through the post-Medieval period with the 2 sites recorded in the survey appearing to have been occupied continuously from the Byzantine period onwards. All other recorded post-Classical sites in the survey area appear by then to have been abandoned.

Brief discussion

Drawing from the preliminary findings of the first survey season, a number of general observations can be made. Initial analysis suggests a settlement cycle with two clear periods of increased settlement in the valley. Starting with at present only a single confirmed Chalcolithic site, settlement numbers rose in the Early through Late Bronze Ages. A subsequent decline in numbers is visible in the Iron Age, Hellenistic and Roman periods,

then rising to the largest number of recorded sites in the Byzantine period. There then follows a slow decline in the Islamic-Medieval and post-Medieval periods. An explanation for the variability of site numbers could be that of cycles of nucleation or dispersal of sites in number and density. However, all sites are relatively modest in size – all less than 2 hectares – and settlement patterns (which are a result of factors such as dependency, function and socio-political variability) are as yet not complete. The phenomenon of centralisation (see Çevik 2007 for an Anatolia-wide discussion for the Early Bronze Age) that can occur at small physical scales, may have played a factor in the emerging settlement patterns, site longevity and transit routes through the valley. These are issues to be further explored.

This summary is understandably an incomplete picture of settlement patterns in the valley, but as a sample it leads to interesting questions regarding agricultural exploitation, the various functions and roles of settlements in different periods and the changing fortunes of the valley as a transit route through the Taurus Mountains from the Mediterranean coast to the Anatolian interior.

French (1965) established the presence of 6 sites with pre-Classical material in the LGASSP's survey area and, as already stated, identified apparent gaps during the Middle Bronze Age and Iron Age in the ceramic sequence of the valley (French 1965: 186). The results of the 2013 season (as well as the excavation results from Kilise Tepe) are beginning to re-inhabit these occupational hiatuses, although site numbers remain low at present.

Supplementing the results of the LGASSP 2013 season, the Göksu Archaeological Project recorded traces of Chalcolithic material at Kıran Kayası (Elton 2008: 242) and mentions the finds of three Bronze Age sites: Çömlek Tepesi, Kesmetepe (Elton 2005 and 2008) and small amounts of Bronze Age ceramics at Kıran Kayası (Elton 2008: 242). In addition, the growth in the number of sites recorded by the LGASSP in the late Roman and Byzantine periods followed by a decline in the Medieval period is a phenomenon similar to that seen by the GAP, with comparable site numbers recorded. As work progresses, it will become possible to make a more detailed synthesis of the results of previous surveys in the Göksu Valley.

As previously mentioned, the valley is considered to have acted as a long-term communication route. Within the survey area, sites, extant structures and memorials, such as the Hittite or Late Iron Age rock relief at Keben (in association with a late Roman track), defences at Maltepe and Akkale (both dating to the Byzantine/Medieval periods) and late Roman/Byzantine bridges at Kışlaköy and Maltepe, indicate transit routes utilising the valley. This role has been much debated (see Mellaart 1954; French 1965: 177; Baker et al. 1994: 143; Elton 2005: 334-335; Postgate and Thomas 2007a: 9-10, Newhard, Levine and Rutherford 2008). Although not deemed a route of primary importance, whose status has been called into question by the use of spatial modelling employing least-cost path and social network analyses (Newhard, Levine and Rutherford 2008; Bikoulis 2012), it arguably acted as an important route for local movement and trade, and as a direct means of reaching central Anatolia from the Mediterranean coast (Elton 2005: 334-335; Newhard, Levine and Rutherford 2008). Combining this role with its inherent agricultural fertility, the valley should possess a complex history of use and occupation. As we build upon the results

of the first survey season, a more extensive picture will emerge of settlement patterns along the entire Göksu River Valley.

Final Remarks

The first season of the Göksu Archaeological Salvage Survey Project allowed us to document various sites along the valley from prehistory to the Medieval period. These initial investigations have provided important information about the local settlement patterns, and have also allowed us to push the cultural history of the region back to the Chalcolithic Period.

If the necessary permit can be acquired, we hope to continue our fieldwork along the Göksu River Valley in 2014. In this second season of our project, we will continue visiting site candidates, which will be determined mainly using newly acquired satellite imagery and a careful study of local geographical features. In addition to this, we hope to conduct intensive surveys in areas around the recorded archaeological sites by systematic field walking. The intensive surveys will be accompanied by geophysical surveys on and around the archaeological settlements and we are also planning to prepare topographical maps of the mounds.

The intensive surveys, geophysical work and topographical mapping will mainly focus on the two plains, where the Göksu River is joined by the Kurtsuyu Çay and the Ermenek Çay, as the terrain is relatively flat, covered with less vegetation and mounds are easier to spot in these areas. We may investigate the low multi-period mound of Örentepe in 2014, as it may provide some important information about ancient local cultures, even though it will not be flooded by the dam lake.

It should also be mentioned that we informed the General Directorate of State Hydraulic Works about the results of our first field season and requested them to provide financial support for future archaeological salvage excavations, as this is their legal duty. The initial reply from the Directorate has been positive but the General Directorate of Cultural Assets and Museums will have to organize these excavations and their funding, mediating between the General Directorate of State Hydraulic Works and us. Therefore, if the necessary permit is given, it is possible that we may also start excavating in this area in collaboration with the Silifke Museum in the near future, probably in 2015, if not in 2014.

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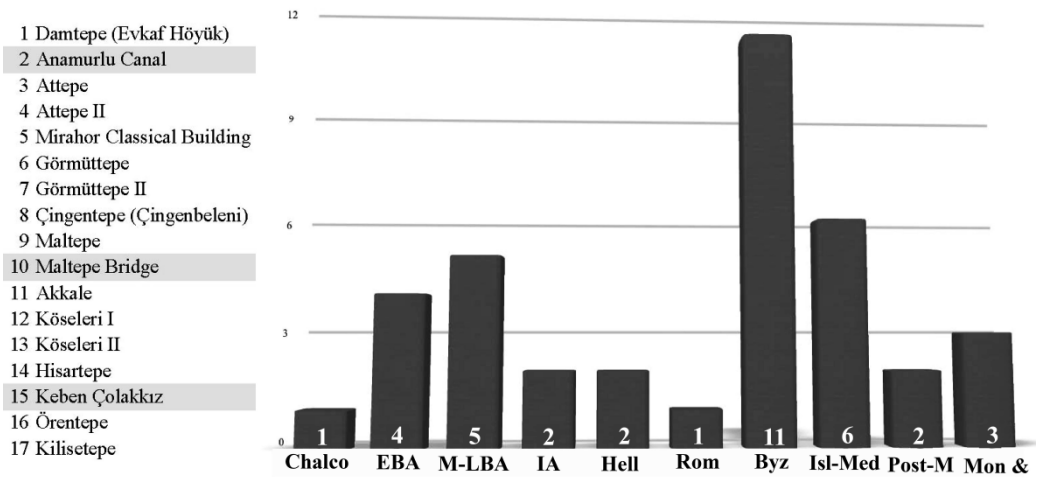

KEY

Periods: Chalcolithic, Early Bronze Age, Middle-Late Bronze Age, Iron Age, Hellenistic, Roman, Islamic-Medieval, Post-Medieval, Monuments and Structures

Table 1. Settlement numbers according to period.

Fig. 1. Map of Turkey and region of survey. After Google Maps.

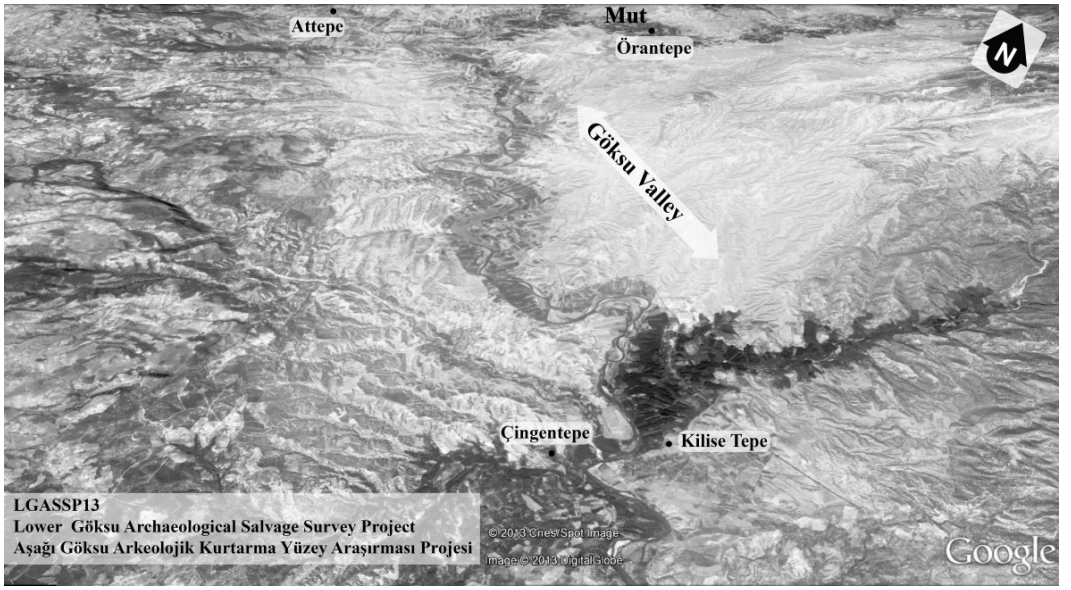

Fig. 2. Map of the Göksu valley south of Mut. Area surveyed in 2013. After Google Maps.

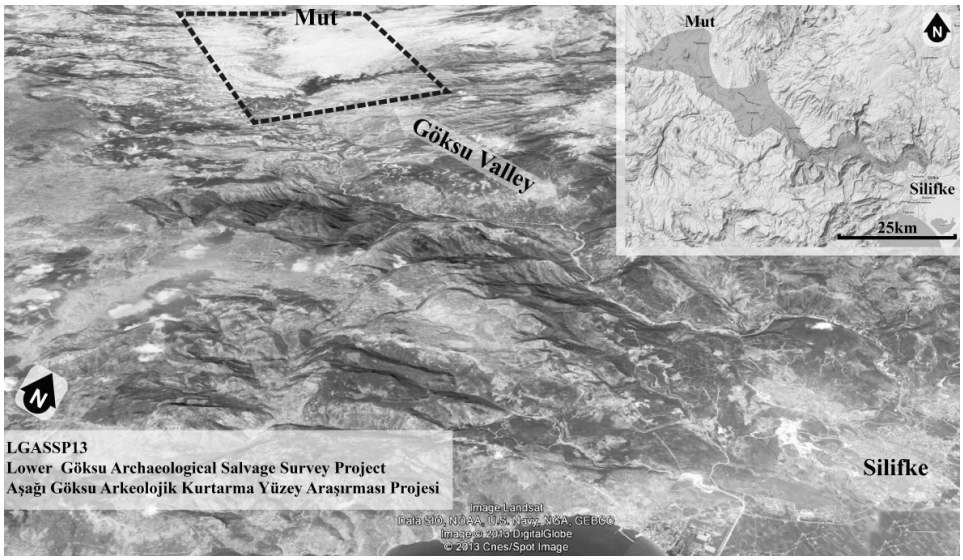

Fig. 3. Map of the Lower Göksu Archaeological Salvage Survey Project (LGASSP), with the flood zone (corresponding to the survey area) and area surveyed in 2013. After Google Maps.

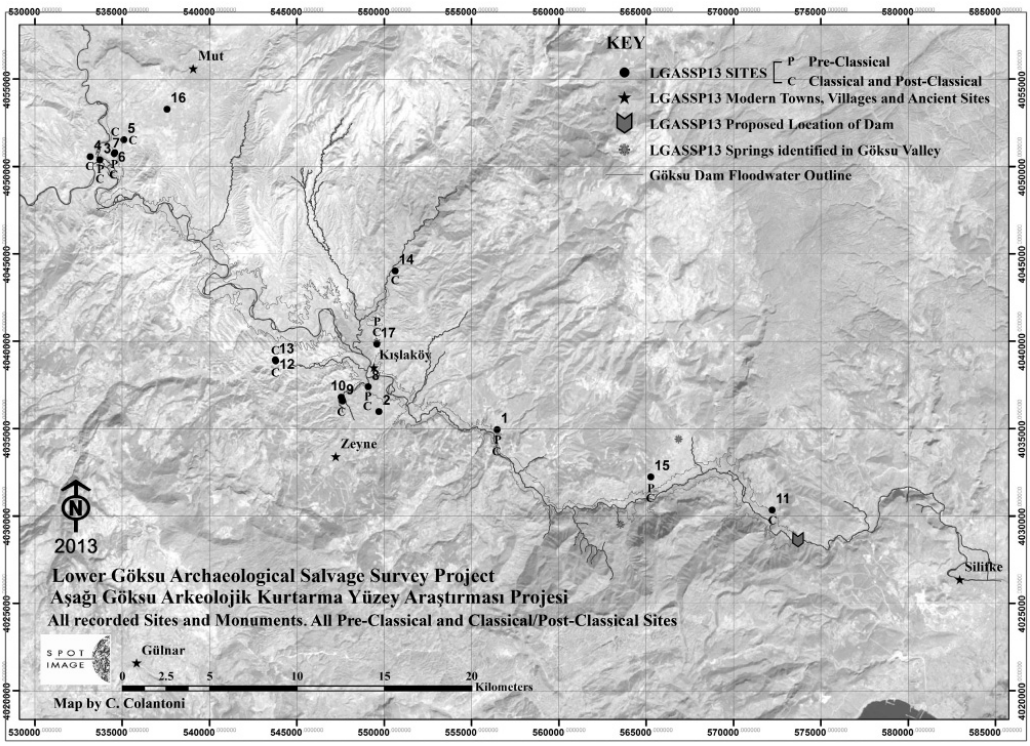

Fig. 4. Settlement distribution map showing all sites and monuments, with pre-Classical and Classical/post-Classical sites indicated.

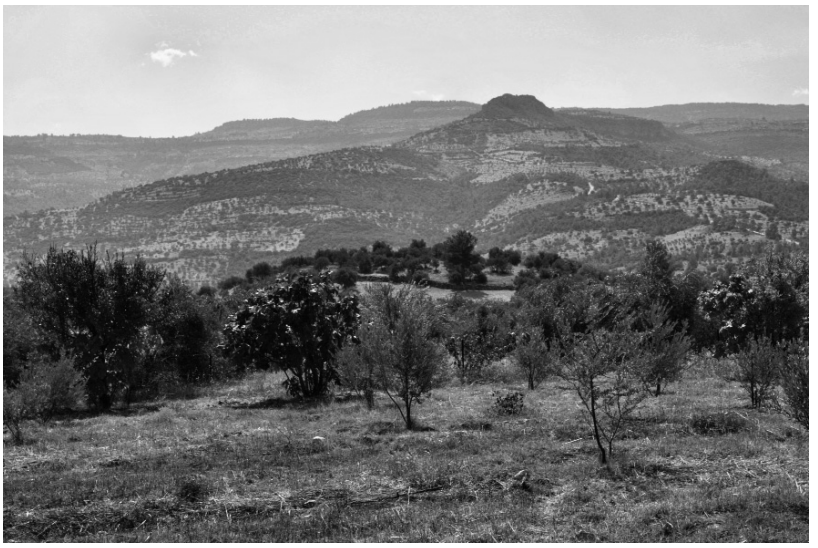

Fig. 5. Damtepe.

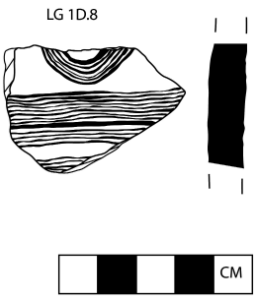

Fig. 6. Combed ware sherd from Damtepe.

Fig. 7. Attepe.

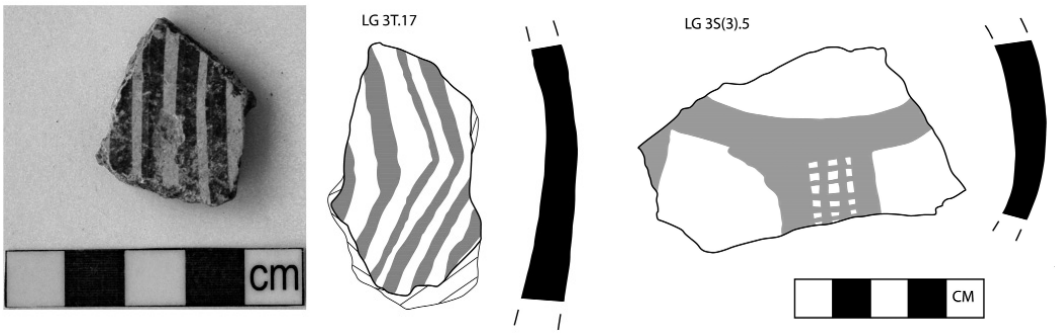

Fig. 8. Chalcolithic sherds from Attepe.

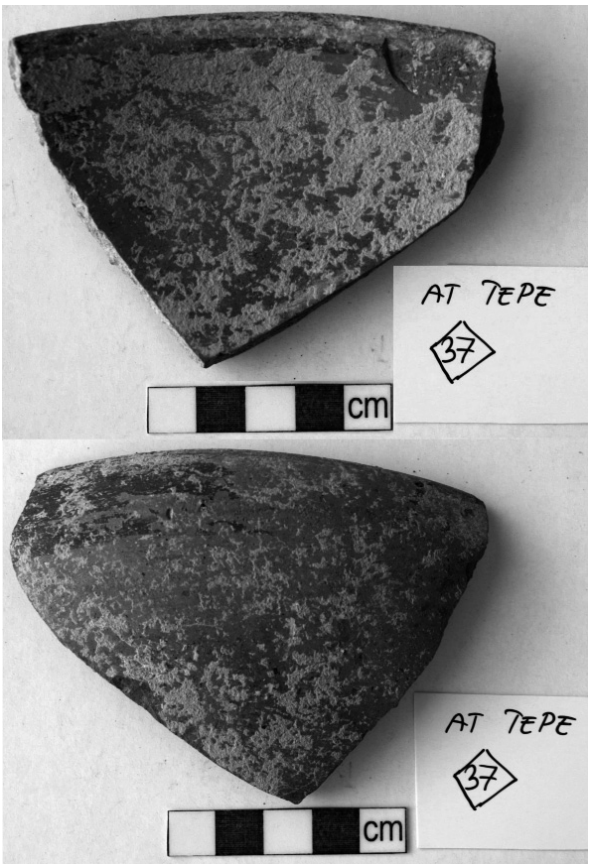

Fig. 9. Red-cross bowl sherd from Attepe.

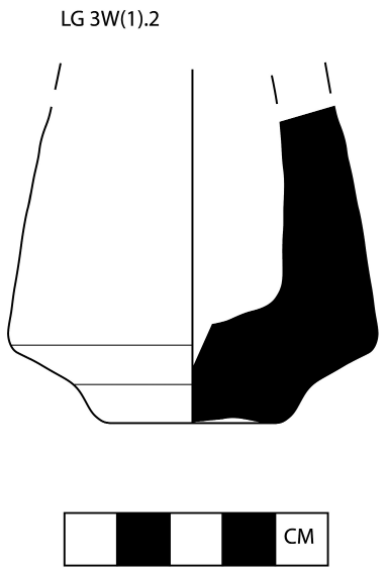

Fig. 10. Base of a libation arm from Attepe.

Fig. 11. Çingentepe.

Fig. 12. A selection of sherds from Çingentepe.

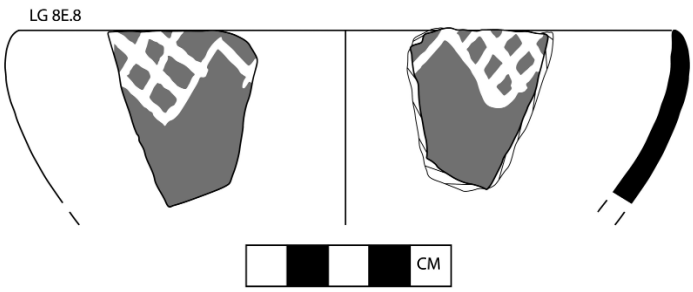

Fig. 13. Sherd of a red burnished ware bowl from Çingentepe.

Fig. 14. Remains of the Classical period structure in the vicinity of Görmüttepe.

Fig. 15. Görmüttepe.

Fig. 16. A lintel or a trumeau belonging to a Byzantine structure at Görmüttepe.

Fig. 17. Akkale.

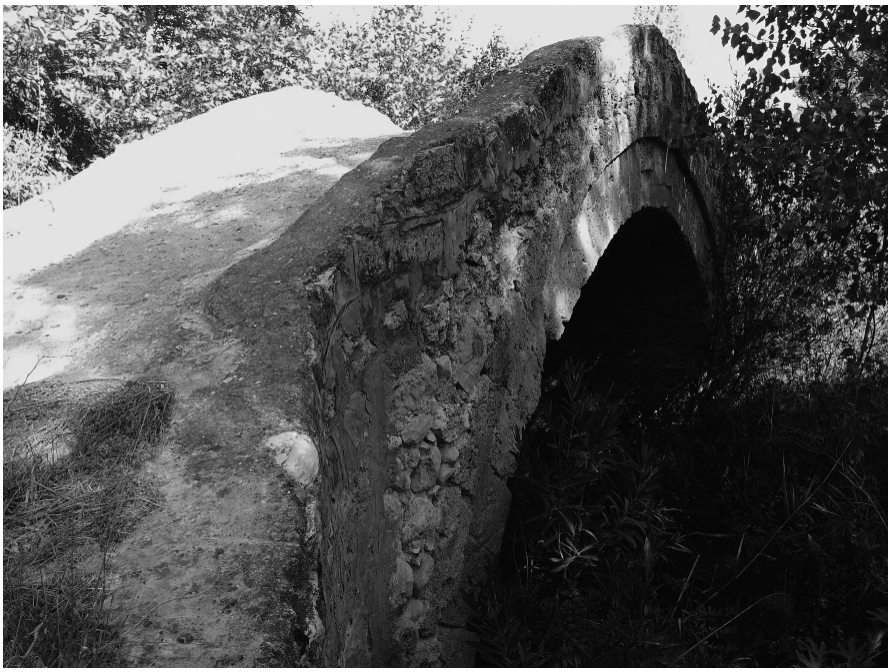

Fig. 18. Maltepe bridge.

Fig. 19. Maltepe.

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EARLY BRONZE AGE POTTERY MANUFACTURE IN WESTERN ANATOLIA: Identifying Hybrid Technologies through X-ray Analysis

Murat Türkteki[*]

Abstract

An emerging set of studies on the application of the potter's wheel in the wider ancient Near East indicates that it was often employed in combination with other methods of pottery making, especially during the early stages of its use. Due to absence of research focusing on this topic, our knowledge of the early use and succeeding developments of wheel technology in central and western Anatolia (c. 2500-2000 cal BC) is at present very limited. Thus, the main purpose of this study is to supply additional information on the diversity of pottery-manufacturing techniques through X-ray analysis of ceramic samples recovered from the Early Bronze Age settlement layers of Küllüoba (Eskişehir, Turkey), a settlement mound with a long and well-documented stratigraphic sequence. The use of the potter's wheel allowed pottery to be produced in larger quantities to meet an increasing demand, which hints at a new political and commercial formation, and its relatively early occurrence in Küllüoba seems to be contemporary with the appearance of archaeological evidence for long distance trade. The significance and appropriateness of using the term "wheel-made" with regards to Anatolian EBA pottery — a term often linked with standardization and mass production — is also discussed.

Introduction

Although intensive research has been carried out on the topic of the diversity of prehistoric pottery-making technologies in the regions of the Levant, Iran and the Aegean (Roux-Courty 1998; Roux 2003; Roux 2008; Berg 2009; Berg 2011a; Berg 2011b), so far no comprehensive research has yet been done for Anatolian assemblages. In Anatolia, comparative pottery analysis has only been undertaken in modern ethnographic studies (Güner 1988), and although X-ray analysis on Hittite pottery exists (Ertem et al. 1999), it is focused on defining the inclusions rather than manufacture techniques. As general practice, most pottery specialists classify ceramics as either hand-made or wheel-made, but the above-mentioned research has shown that in the early stages of pottery production a range of different techniques were often used on the same pot and that the wheel was used in different steps of the manufacturing process (Roux and Courty 1998). One of the earliest ethno-archeological studies, focused on modern Mexican potters, demonstrated that contrary to widespread belief various discrete methods of pottery manufacturing were concurrently employed (Foster 1959). This was a turning point for further investigations on the topic, and more recent research carried out with X-Radiography have since then confirmed that multiple techniques were often employed to make pots in prehistoric periods (Berg 2008, 2009, 2011a; Courty et al. 1995; Henrickson 1991; Rice 1987; Rye 1981; Roux

* Ass. Prof. Murat Türkteki. Bilecik Şeyh Edebali University, Faculty of Science and Letters, Department of Archaeology.

et al. 1998). Using a potter's wheel made with two discs without pivot stone recovered from late third millennium BC layers at Tel Yarmouth (southern Levant), recent experimental analysis provided important technological information on third millennium BC wheels. Attempts to produce pottery with the original *tournette* seem to suggest that, in absence of the pivot stone, the early potter's wheels did not have enough rotative kinetic energy (RKE) to manufacture the vessels all at once on the wheel (Roux et al. 2009). According to Berg's study, ceramic production that exclusively employed potter's wheel was limited to vessels with heights up to 12 cm in Bronze Age Crete (Berg 2011a). In this sense, we can characterize the wheel as a complementary instrument in production process of pottery rather than a defining tool. The term wheel-made, as far as prehistoric pottery is concerned, should thus not necessarily mean that the vessel is shaped on the wheel from beginning to end of the manufacturing process (i.e. 'wheel-throwing'); instead, it implies a hybrid method comprising techniques such as finishing handmade pottery on the wheel ('wheel-shaping'), throwing only the rim of the vessel separately on the wheel ('wheel-shaping'), and finishing on the wheel a pot that was made by a coiling technique ('wheel-coiling').

Therefore, the aim of this article is to find out whether the same hybrid techniques were also in practice during the Early Bronze Age (henceforward, EBA) in the Anatolian peninsula, a land-bridge that played an important role in cultural interactions between upper Mesopotamia and the Aegean (Efe 2007; Şahoğlu 2005; Rahmstorf 2006; Özdoğan 2007). In order to achieve this, visual inspection and X-radiography was performed on early EB III pottery samples unearthed at Küllüoba, an important center situated on the main communication route between inland Anatolia and the Troad (Fig. 1). The extensively excavated and radiocarbon-dated stratigraphic sequence has shown that Küllüoba's occupation also covers the phase of diffusion of the potter's wheel in the area, c. 2400-2200 cal B.C. (Efe and Fidan 2008) (Fig. 2) and it is therefore the ideal case study to approach the matter in Anatolia.

ARCHAEOLOGICAL BACKGROUND

Surface surveys and excavations, particularly those carried out in recent years in western Anatolia, have provided new clues regarding the establishment of an important trade network between Mesopotamia and western Anatolia from the mid-third millennium B.C. onwards. In this period, trade relations appear to have intensified between Cilicia and Troy along a route crossing inland western Anatolia, at roughly the same time when the wheel technology was applied for the first time on local wares in the area (Efe 2007). This suggests that western Anatolian potters may have adopted the technology from Cilicia, where local wheel-shaped pottery was already produced at the site of Tarsus-Gözlükule in Ubaid and post-Ubaid levels, i.e. around the mid-fourth millennium B.C. (Goldman 1956: 76, 83, 87, Fig. 340). This hypothesis is strengthened by typological analysis carried out on ceramics from Küllüoba that indicate close similarities between its early EB III pottery assemblages with those of Tarsus. During the early EB III (c. 2400-2200 cal B.C.), the

use of the potter's wheel on local ceramics (essentially restricted to incurving rim bowls, tankards, depa, platters, necked jugs and amphorae) appeared in the area defined as "Great Caravan Route" by Efe (Efe 2007), while further east (e.g. at Kültepe) the first wheel-made pottery was most probably import (Türkteki 2010). Evidence of early production of wheel-made pottery occurs also at other western Anatolian sites, for example in Aphrodisias, where "EB 2-4" levels yielded substantial quantities (Joukowsky 1986, 358-62), at Kaklık Mevkii cemetery area A (Topbaş et al. 1998, 42, 69, 73) and in Karataş-Semayük, where the wheel-made pottery is represented by very little amounts and only limited to forms such as incurving rim bowls, two-handled tankards and depas (Eslick 2009: 249). In Beycesultan there is a single wheel-made plate from level XIII, then after an occupation hiatus wheel-made pottery is significantly present in level XII, i.e. late EB III (Lloyd and Mellaart 1962: 179, 200-14). Recent excavations in Laodikeia indicate that the potter's wheel in this region appeared towards the end of early EB III (Umay Oğuzhanoğlu pers. comm.), a trend confirmed by research carried out at Liman Tepe on the eastern Aegean coast (Şahoğlu 2002) and nearby Ulucak Höyük (Çilingiroğlu et al. 2004: 15-16). The wheel-made pottery that marked the beginning of the EB III in western Anatolia is mostly seen in the Upper Sakarya Valleys, Phyrgian Plateau and Eskişehir Plain. Aside from the east Marmara-Troy route, the use of the wheel is rather limited or absent to the West and East of this route at least before to 2200 BC (Türkteki 2010). During the early EB III (2400-2200 BC), wheel-made pottery represented only 10-20% of the whole assemblage at most sites. What is interesting is that, with very few exceptions represented by "Syrian" bottles and beakers, the adoption of wheel production techniques from Upper Mesopotamia/Cilicia did not bring with it Mesopotamian wares, forms and styles to western Anatolia (Türkteki 2012). Lack of research has meant that very little is known about pottery manufacture in Early Bronze Age western and central Anatolia, though the existence of pottery workshops is attested by the scantily-published evidence from Kumyer Mevkii (Tırpan & Gider 2011: 386-387) and Seyitömer (Bilgen 2011); a single rotative stone disk was further discovered in the EBA levels at Troy during Schliemann excavations (Schmidt 1902: 306 no. 9275). The only detailed study on the earliest use of the potter's wheel and its spread during the late EBA has been done by the current author (Türkteki 2010, 2012).

THE ARCHAEOLOGICAL EVIDENCE FROM KÜLLÜOBA

The site of Küllüoba, under excavation since 1996, is a medium-sized settlement (ca. 5 ha) with an uninterrupted EBA sequence situated near Eskişehir in inland north-western Anatolia and close to an important natural route connecting the Marmara sea and the Troad with the central Anatolian plateau (Efe 2007; Şahoğlu 2005, Fig. 2). The more extensively investigated EB II levels yielded a large public complex (Fig. 3) dated c. 2600-2500 cal. B.C., which is so far the earliest one to have been identified in western Anatolia, and an extensive lower town (Efe and Fidan 2008; Fidan 2012, Fig. 1). The pottery of Küllüoba from different phases of the Early Bronze Age has also been studied in considerable detail (Ay 1999; Sarı 2011; Türkteki 2010). According to precise comparisons based on pottery

and other finds, we can suggest the synchronization shown in figure 2 between the early EB III phases of Küllüoba and Troy, supported by several radiocarbon dates from both sites (Efe 2007: Fig. 18; Türkteki 2010: Fig. 10; Türkteki 2012).

At Küllüoba, wheel-made pottery appears for the first time in Phase IIIC (in a level archaeologically contemporaneous with Kültepe level 13 and Troy IIc) and gradually increases in the succeeding IIIB and IIIA phases, from ca. 3% of the total production to ca. 13% (Fig. 4). This phase is also marked by the first appearance of red-coated wash and plain wares. The latter is particularly interesting because it occurs in tight association with wheel-made pottery and is in clear contrast with the previous Late Chalcolithic and EB I-II ceramic traditions of slipped/burnished surfaces. Its employment can be plausibly explained by the fact that the water used during production did not necessitate the pot to be further slipped. At the same time, forms such as the depas, "Trojan A2" platters and amphorae are added to the repertoire and they are increasingly shaped on the wheel in the succeeding phases III B and III A (Türkteki 2010). According to statistical analysis, the Trojan A2 platter is the most commonly manufactured form on the wheel at Küllüoba, just as at Troy (Türkteki 2012) (Fig. 5).

While sizes of other form groups vary considerably, the diameter of the platters varies from 18 to 22 cm. According to the analysis of Berg on the Knossian pots, over 80% of wheel-thrown pottery is smaller than 10 cm (Berg 2009: 167, Fig. 4).

ANALYTICAL METHODOLOGY

The basic X-ray method can be described as the penetration of an object by electromagnetic radiation. When the applied radiation is transmitted through the object a grayscale image showing atomic density and thickness is reflected onto photographic film or a monitor (Berg 2011a: 1). This method is used in many forms of scientific examination ranging from simple radiographs to detailed MRIs and to industrial applications for the quality control of the produced materials. This method is also used for the detailed investigation of metal objects, paintings and documents (Lang & Middleton 2005), and has more recently been used by several researchers of ancient pottery in order to determine the manufacturing process and fabric composition (see Rye 1977, Berg 2009; Carr 1993; Henrickson 1991). The main purpose of this study is to apply the X-ray method on EBA Anatolian pottery to supply information on manufacturing techniques such as coiling and wheel-throwing, and combined methods such as wheel-coiling (similar earlier studies include Rye 1977; Rice 1987; Berg 2008, 2009).

On the X-ray images, the small black gaps in vessel walls represent air voids formed inside the clay during kneading (Berg 2009). Such voids, as well as minerals and inclusions that can be seen under X-ray, form in a certain direction according to the primary forming technique used (Fig. 6, Rye 1977; 1981; Berg 2009). According to Rye and Berg, diagonal voids are characteristic of wheel-throwing, while coiling and wheel-coiling are

characterized by horizontal voids. With this method it has thus been possible to determine the manufacturing techniques of the examined samples, the original surfaces of which cannot be visually assessed as the surfaces are slipped.

Vessels entirely thrown on the wheel were made from a single lump of clay that was progressively shaped and stretched upwards with the help of rotative movement applied on the wheel, causing the vessel wall to get increasingly thinner in the upper part (Berg 2008: 1181). This process is recognizable on the X-ray images by the changes in colour from darker gray at the bottom of the pot to lighter gray towards the top, as for example appreciable in Fig. 8a (Berg 2009: 143). The spiral-like rotative movement impressed on the pot is further detectable from the direction of the elongated voids that tend to be diagonally aligned towards the upper part of the vessel. According to Rye, the angle formed by these diagonal voids depends on the speed of the wheel, with values between 20-30° being produced by slow wheel (tournette) and values above (30-45°) indicative of fast wheel (Rye 1977). However, Berg's studies have shown that there may be different arrays even on the same pot (Berg 2008: 1180). Circular voids are present in open vessels and in the bottom parts of closed vessels due to the tighter radius of the vessel, as visible in Fig. 10 (Rye 1977: pl. 3). In vessels made with coiling or other-hand-made techniques, the wall thickness is overall less regular, and this can be identified in the X-ray image by irregular colour changes across the different areas of the wall. In hand-made pots, voids tend to be more abundant because of insufficient kneading, voids are horizontal (following the progressive addition of coils) and coil seams can generally be identified by the existence of deep grooves (called rillings) that are the outcome of overlapping of two distinct coils. While parallel ridges on the inner surface of a pot are generally described as wheel-marks, they can have been produced also by the pressure applied by the potter's fingers (or a cloth) in an attempt to smooth the surface, and thus should not be automatically considered markers of wheel-throwing technique.

In vessels that were manufactured with combined techniques, the potter's wheel was used to join, thin or smooth the walls that were created with handmade techniques (Berg 2008: 1181). Four different types of combined techniques collectively termed as "wheel-shaping" (coil building, coil joining, wall thinning and pot shaping) can be identified, and where most likely employed to provide a stronger join and to smooth the surface irregularities (Roux & Courty 1995). These mixed methods can be identified on the X-ray analysis by the co-occurring presence of markers normally attributed to either wheel- or hand-made manufacture.

For this study, 16 out of 10.236 recorded sherds from stratified EB III levels were chosen as representative samples to be subjected to X-Ray analysis on the basis of their size, ware and possible manufacturing techniques. However, high-quality images that could provide sufficiently precise indications of manufacturing techniques were obtained only for 6 of the sampled sherds (discussed below). While this is not a statistically significant dataset, it provides at least a preliminary assessment on the variety of different manufacturing techniques employed at Küllüoba.

The device and shooting parameters used on the samples in this study were:

X-ray device: ERESCO
Shooting Parameters
X-ray Energy = 55 kV
Tube Focus — Film Distance: 680 mm
Tube Current: 3MA
Duration: 100-120 s.
Film: Agfa, D4
Chemical Bath: Manual

ANALYSIS

The oldest piece among the studied examples (Cat. No. KO-1) belongs to the lower part of a depas cup from Phase III B (Fig. 7a-c). Several small diagonal voids are clearly detectable in the clay matrix (Fig. 7a) and were formed during the shaping on the wheel, while the darker bands that might be incorrectly interpreted as coil seams are in all likelihood result of tearing the wall during wheel-throwing, a phenomenon that occurs when the clay is wet and is pulled upwards too quickly.

The next example (Cat. No. KO-2) is the bottom part of a depas cup from Phase III A (Fig. 8a-c). On the detailed X-ray image of this sample, many diagonal voids are clearly detectable and seem to form a 30° angle (suggestive of the use of a slow potter's wheel), though the small size of the sherd does not allow to reach a definite conclusion on this. The deep rillings seen with the naked eye on the interior surface are most probably caused by the pressure of the fingers while shaping. The collected evidence suggests that this piece as well is most probably wheel-thrown.

Another sherd (Cat. No. KO-3) belonging to a double-handled tankard in wash ware (Fig. 9a-c) comes from an early EB III votive pit, the exact phase of which could not be determined. On visual inspection, a fine rilling that can be seen on the interior of the neck indicates that the tankard was probably manufactured in at least two pieces. The lines seen on the X-ray image running diagonally show that only the top part of the vessel was wheel-thrown. On the lower part there are no clear voids, although it is likely that the lower section was handmade, and that the two separate pieces were later joined together and further smoothed on the wheel (i.e. wheel-shaped).

One interesting example (Cat. No. KO-4), found in another early EB III votive pit, is a fragment of the body, shoulder, and neck attachment of a necked jar (Fig. 10a-c). Through X-Ray analysis, this sherd can be roughly divided in three parts that were manufactured separately: in the lower part (the body), diagonal elongated voids suggest the use of wheel-throwing technique. Above the rilling, the middle section (the shoulder) shows horizontal voids and coil seams, but no parallel ridges: this suggest that this part was entirely hand-made with coiling technique. The upper part (the neck attachment) is instead

characterized by diagonal voids indicative of wheel-throwing technique. With this evidence it is possible to surmise that larger vessels may in some cases have been made in different stages and with different techniques for the various parts of the pot.

Sample KO-5, the bottom part of a "Trojan A2" platter from a votive pit dated to phase III A (Fig. 11a-c), shows radial elongated voids arranged in circular fashion around the centre of the sherd, a pattern indicative of wheel-throwing technique. Many similar examples have been found in Küllüoba EB III levels (Türkteki 2010, 2012), though they have only been visually analyzed.

The last analyzed specimen (Cat. No. KO-6) is a jar base fragment from a votive pit dated to phase III A (Fig. 12a-d). Visual inspection of the sherd initially suggested that it might have been thrown on the wheel, given the presence of uninterrupted thin lines on the surface interpreted as wheel marks. However, the X-Ray image clearly shows the presence of coil seams (Fig. 12c), and the variations in the thickness of the wall as well as the spacing of seams suggest that the piece was not shaped on the wheel but entirely hand-made with coiling technique.

DISCUSSION OF THE RESULTS

While the small size of the sampled dataset does not allow a statistical evaluation of the results, and more analyses are needed to confirm the observed trends, a preliminary assessment shows that during the early EB III phases of the Küllüoba (IIIC-IIIA, c. 2400-2200 cal BC) a range of techniques were employed in pottery manufacture. Visual and X-Ray analysis seem to indicate that, when the potter's wheel was employed, open shapes like platter KO-5 and small closed forms with simple profile like depa cups KO-1 and KO-2 were entirely produced on the wheel (wheel-thrown) and in a single piece. Small closed forms with a complex carinated profile like tankard KO-3 were instead wheel-thrown in two different pieces and later joined employing wheel-finishing techniques. On the other hand, larger closed vessels like KO-4 were manufactured in multiple parts and using different techniques on each section (from wheel-throwing to coiling), that were later joined together using wheel-finishing techniques. Employing data coming from the secure stratigraphy of the site, it also seems that different techniques were in use at the same time, and in particular wheel-thrown vessels occur in the same archaeological levels as wheel-shaped specimens.

Visual analysis performed by the author on over 10.000 sherds from Küllüoba IIIC-IIIA phases confirms the results presented here, and indicates that the "Trojan A2" platters and bowls with incurved rim were the most common shapes produced on the wheel, arguably because of their simple profiles and relatively small size. On the other hand, larger vessels like storage jars and pithoi continue to be hand-made, and in fact hand-made production remained dominant throughout the early EB III period (between 97% and 87% of the total assemblage), and the shapes of all wheel-made vessels (depa cups, tankards, "Trojan A2"

platters and jars) are also well-represented in the hand-made repertoire with no detectable typological differences (Fig. 13) (Türkteki 2010, 2012).

The inability to produce complex or large closed vessels on the wheel in a single piece and the extensive use of coiling for bigger specimens suggest that the employed wheel had a low rotative kinetic energy characteristic of the slow wheel (*tournette*). This fits well with research from Upper Mesopotamian and Levantine contexts, where the use of the fast wheel became widespread only in the early second millennium BC (Roux 2008, 2009, Laneri 2011).

CONCLUSIONS

The analysis of the samples suggests that without the X-radiography it is sometimes difficult to establish beyond doubt the manufacturing techniques; in particular, visual inspection was often misleading on pots that were slipped, smoothed or produced with hybrid methods. As demonstrated here, it is likely that at least part of the pottery classified as wheel-made from western Anatolian excavations during this period were not actually entirely thrown on the wheel; instead, hybrid methods were most likely used, with the possible exception of "Trojan A2" platters and bowls. This craft hybridity of course raises doubts about the standard explanation for the introduction of the potter's wheel, i.e. to facilitate standardized or mass production.

Although faster than handmade techniques (cf. Berg 2011b), wheel-combined methods and the concurrent use of the *tournette* would not have allowed the production of standardized vessels, nor would have significantly increased the speed of their manufacture, a case that can be made particularly for complex or large shapes. On the other hand, examples of completely wheel-thrown A2 platters and bowls indicate that standardization may have been occasionally achieved. In the last two centuries of the third millennium BC both forms and fabrics converge across the entire western and central part of the Anatolian peninsula. This pattern may relate to the political restructuring of the area (Efe and Türkteki 2005). The low density of production with the potter's wheel in the whole early EB III period (200-250 years) can be related with the adaptation of the potters to the new technology and we might even think about the possibility that there existed mobile western Anatolian potters through whom standard forms were transmitted (Türkteki 2010, 2012). Thus the Early EB III period marks the very beginning of development towards standardization in pottery production in western Anatolia.

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Cat. No.	Trench	Inv. No	Shape	Ware	Phase	Context	Technique	Fig.
KO-1	Z19	400	Depas	Red Slipped	III B	Layer	Wheel-thrown	7a-c
Description: The paste is beige with mica inclusions. The surface is vertically burnished and dark red slipped. The interior surface is plain.								
KO-2	AC26	154	Depas	Red Coated	III A	Votive Pit	Wheel-thrown	8a-c
Description: The beige paste has mica inclusions. The surface is dark red slipped and brilliantly burnished. No slip on the interior surface.								
KO-3	AE19	228	Tankard	Wash	EB III	Votive Pit	Wheel-shaped	9a-c
Description: The beige paste has mica and small grit inclusions. Brown-washed and unburnished surface with discoloration.								
KO-4	U18	113	Necked Jar	Red Slipped	EB III	Votive Pit	Wheel-coiled	10a-c
Description: The gray paste has mica inclusions. Reddish brown slipped and burnished.								
KO-5	AC26	102	A2 Platter	Plain	III A	Votive Pit	Wheel-thrown	11a-c
Description: The beige paste has mica and grit inclusions. The surface is plain.								
KO-6	P22	20	Jug	Plain	III A	Votive Pit	Coiled	12a-d
Description: The beige paste has mica, shell and grit inclusions. The surface is plain. The seams of the coils and smoothing marks are clearly seen on the interior.								

Catalogue of analyzed pottery sherds.

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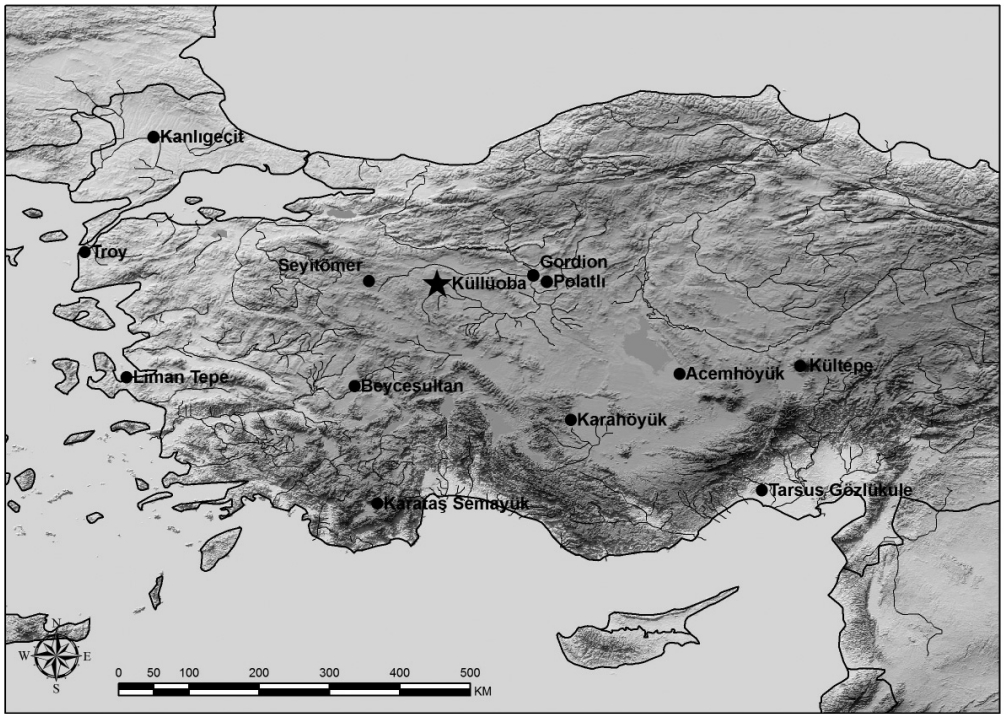


Fig. 1. Major EBA Sites in western Anatolia.

ANATOLIAN EBA CHRONOLOGY	KÜLLÜOBA			Troy
	Eastern Sector	C 14 Dates	Western Trenches	
Late EB III (transitional period into the MBA)	IIA	2044-1937 BC		
	IIB	2139-2110 BC		
	IIC	2198-2160 BC		
	IID			IV
	IIE			
Early EB III	IIIA	2314-2197 BC		III d
	IIIB			II g
	IIIC			II c
Late EB II	IVA			II a-b
	IVB			I k
EB II	IVC	2603-2487 BC		
	IVD			
	IVE			
	IVF		1	
EB I	VA			I g
	VB	2701-2620 BC	2	I f
	VC	2862-2809 BC		
Transitional Period into the EBA			3	
			4	
			5	I a
Late Chalcolithic			6	

Fig. 2. Chronological chart synchronizing the stratigraphies of Küllüoba (with calibrated C14 dates) and Troy.

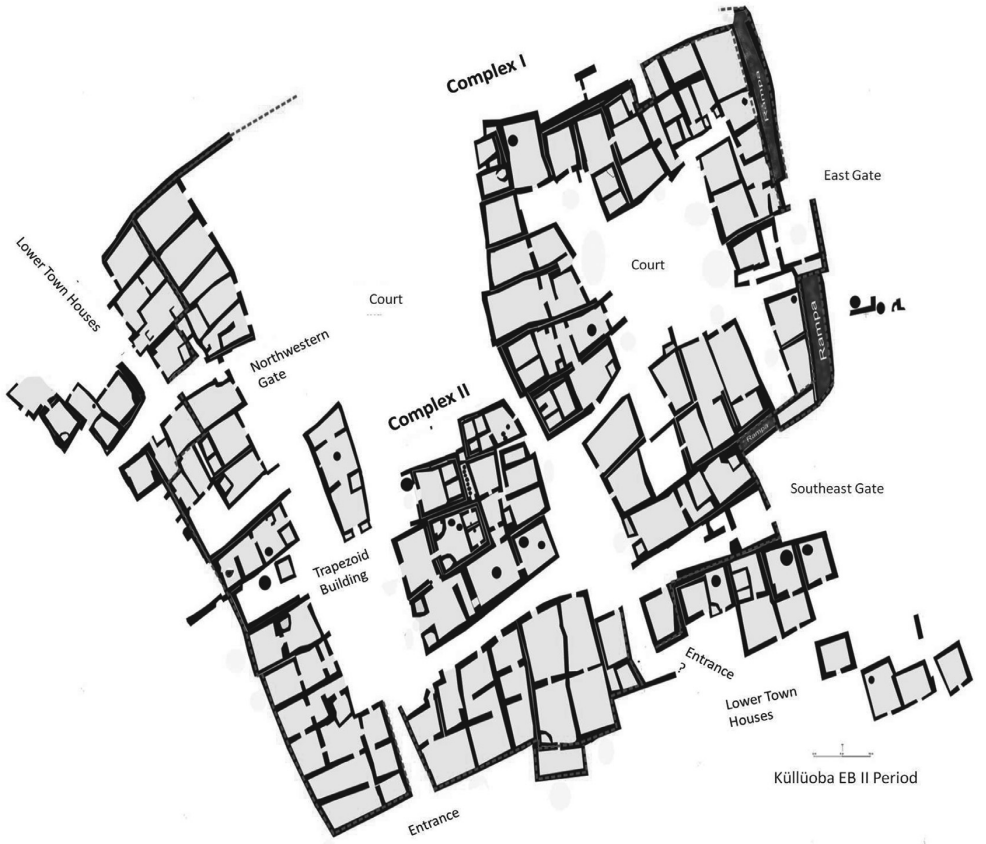
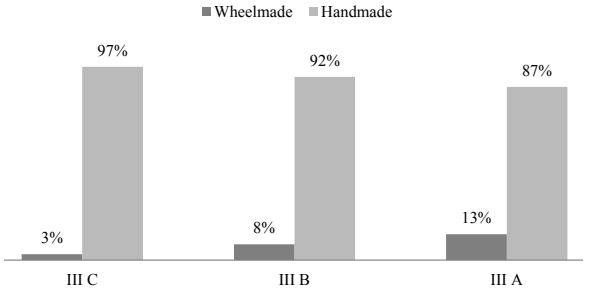


Fig. 3. Küllüoba EB II Settlement Plan.



	III C	III B	III A
Handmade	2770	2196	4376
Wheelmade	72	195	627

Fig. 4. Ratios of wheel-made and handmade pottery groups according to phases at Küllüoba (wheel-coiled, wheel-shaped and wheel-thrown samples are evaluated together).

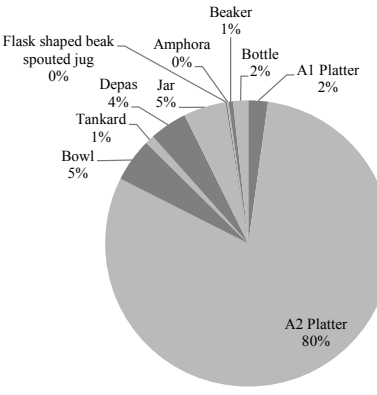


Fig. 5. Ratios of wheel-made forms of EB III pottery from Küllüoba.

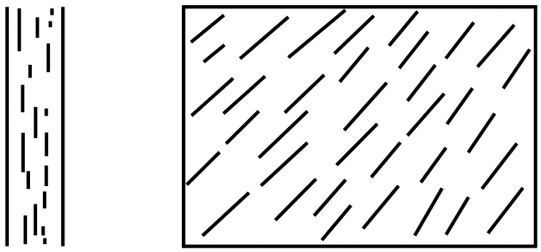


Fig. 6. Schematic drawing of radiograph of wheel-thrown pottery (after Carr 1990, Rye 1981, Middleton 1995, Berg 2008, Berg 2009).

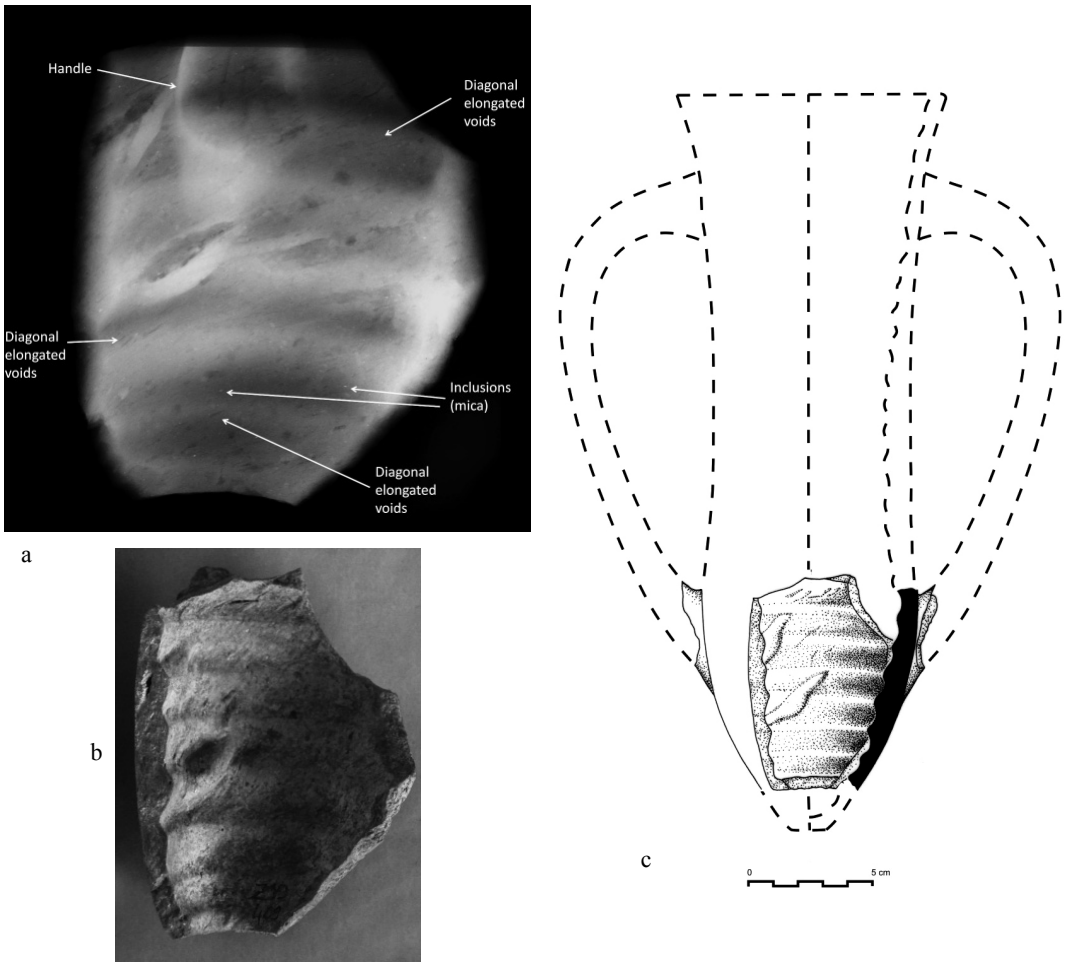


Fig. 7. Depas from Küllüoba (Cat. No. KO-1): (a) radiograph, (b) photograph, and (c) drawing.

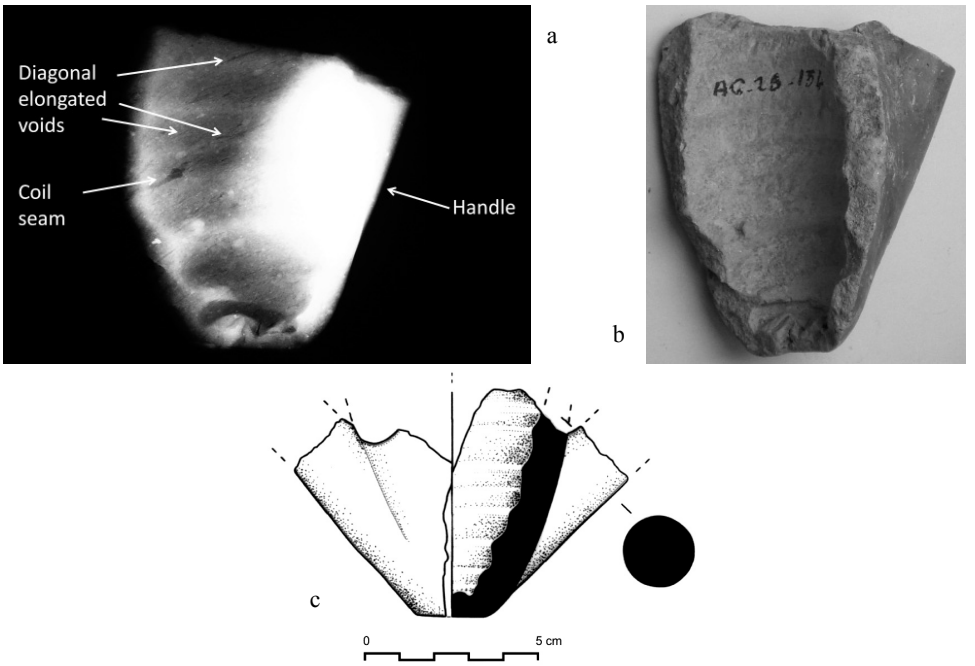


Fig. 8. Depas from Küllüoba (Cat. No. KO-2): (a) radiograph, (b) photograph, and (c) drawing.

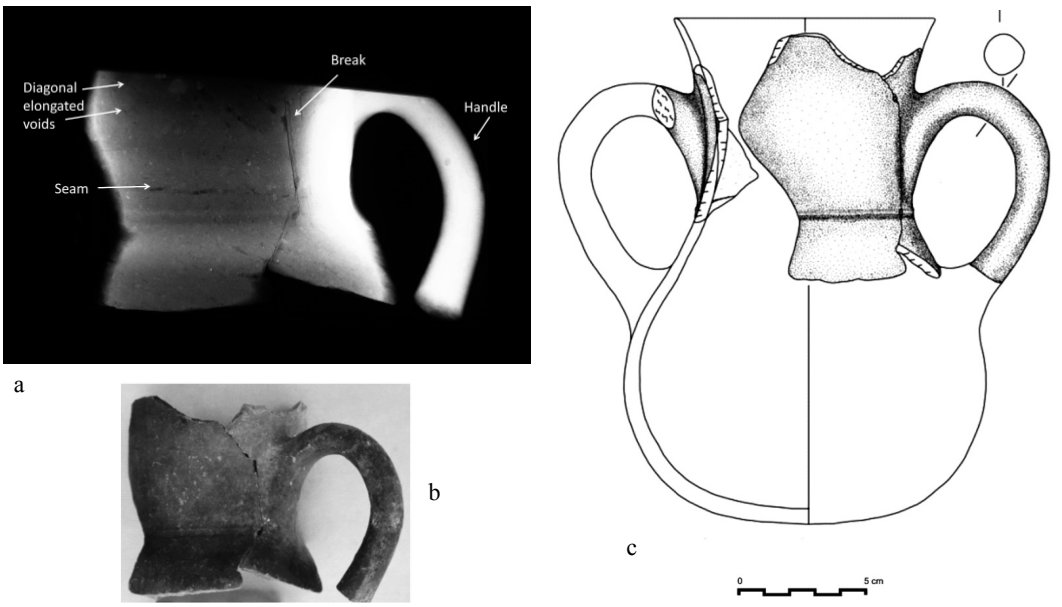


Fig. 9. Tankard from Küllüoba (Cat. No. KO-3): (a) radiograph, (b) photograph, and (c) drawing.

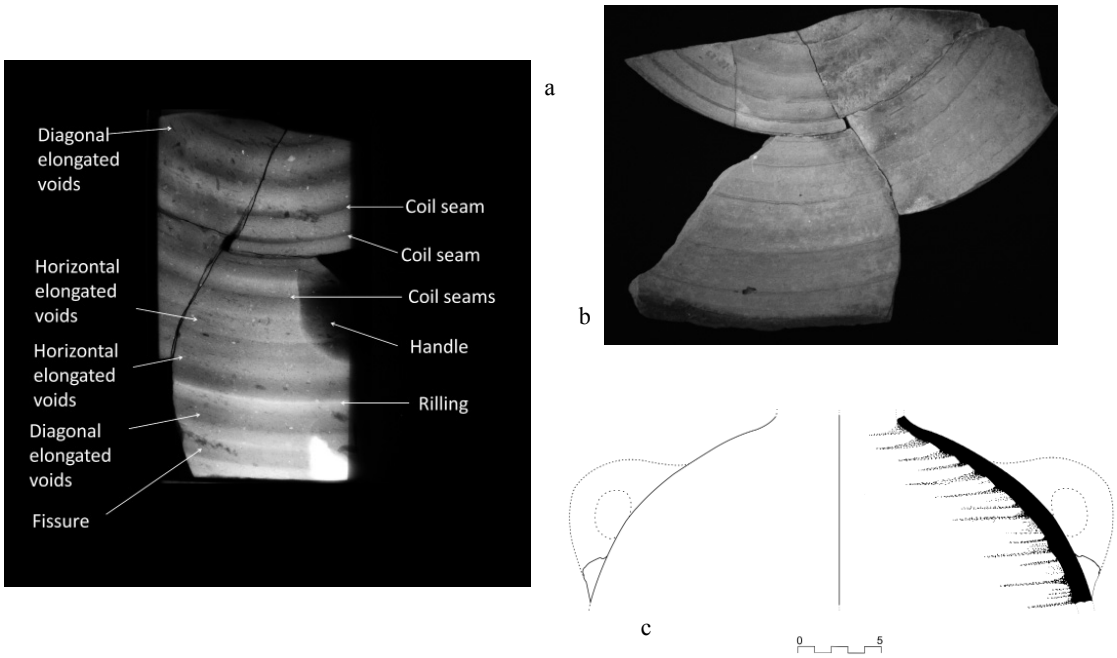


Fig. 10. Necked jar from Küllüoba (Cat. No. KO-4): (a) radiograph, (b) photograph, and (c) drawing.

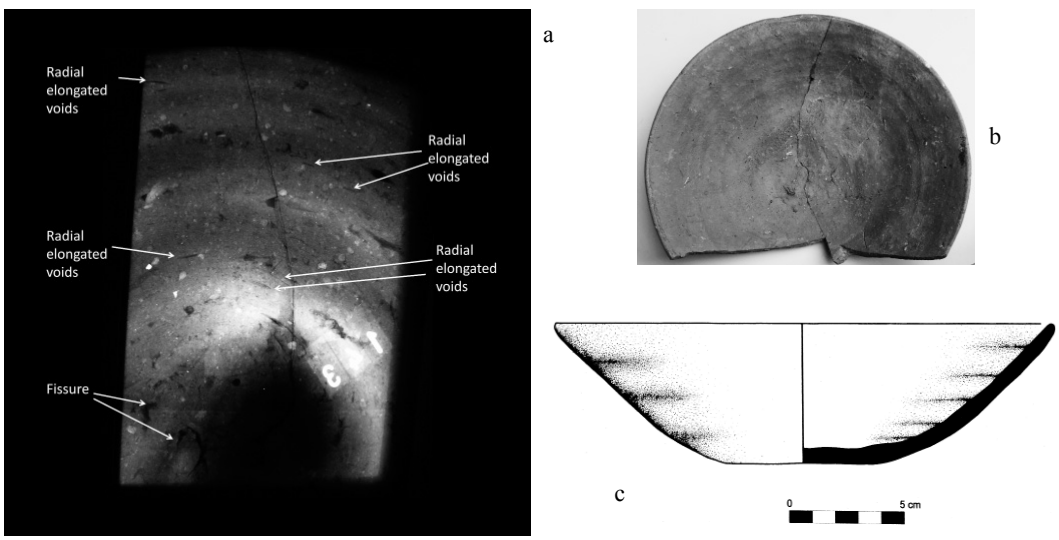


Fig. 11. A2 platter from Küllüoba (Cat. No. KO-5): (a) radiograph, (b) photograph, and (c) drawing.

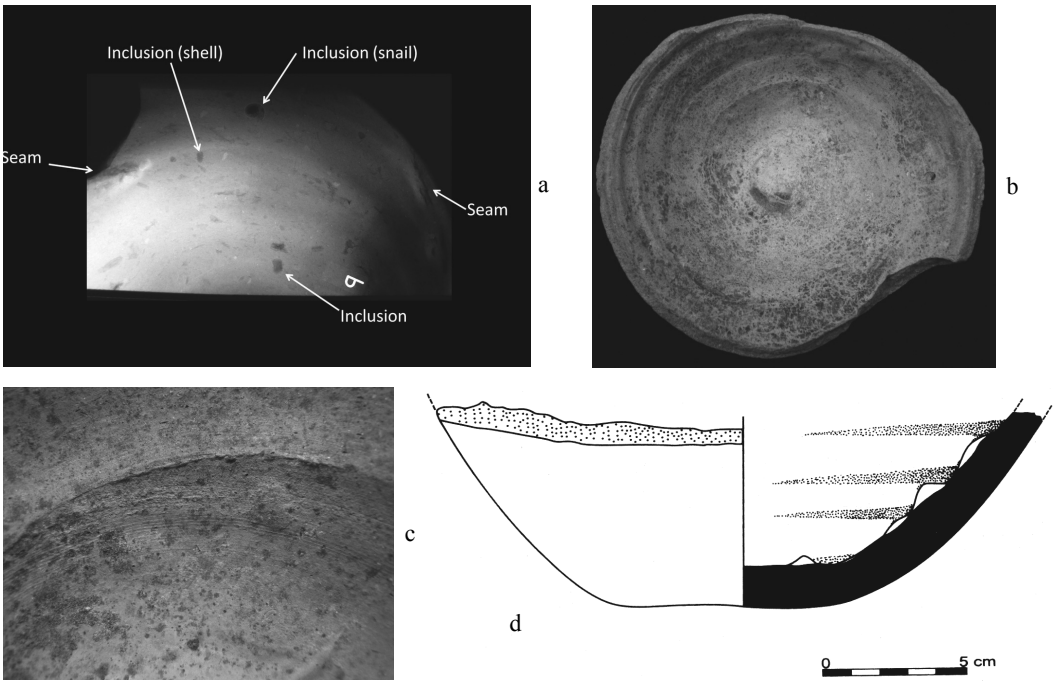
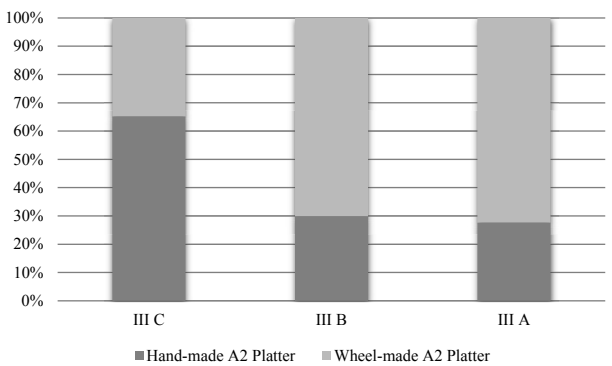


Fig. 12. Jar from Küllüoba (Cat. No. KO-6): (a) radiograph, (b) photograph, (c) detail of smoothing marks, and (d) drawing.



	Hand-made A2 Platter	Wheel-made A2 Platter
III C	45	24
III B	35	82
III A	140	366

Fig. 13. Percentages of hand-made and wheel-made A2 platter through the EB III phases in Küllüoba.

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NEW CONSIDERATIONS AND REVELATIONS REGARDING THE ANTHROPOMORPHIC CLAY FIGURINES OF ALIŞAR HÖYÜK

Shannon Martino

Abstract

The site of Alişar Höyük in north central Anatolia has long been known to be one of great importance as well as a site riddled with chronological issues, especially regarding its early periods. Given recent reconsiderations regarding the dating of the site as well as my own examination of the site's finds in the collection of the Oriental Institute new insights about the site's place in interregional networks have come to light. A classification of the figurines from Alişar Höyük and their relationship to contemporary figurines forms the basis of this work.[1] Several figurines that have never before been published or in some cases even inventoried are included in this analysis. Because so many sites have been excavated in Turkey and neighboring countries since the excavation of Alişar Höyük, this reconsideration of the site's figurines is due. We can now illustrate the extensive nature of networks that ran through Alişar Höyük from its earliest levels. These networks spanned from southeast Europe to central Anatolia and beyond and seem to show that, culturally, Alişar Höyük was initially oriented to the west and north, particularly to southeast Europe and northern Anatolia, and only later began to develop traditions unique to the site and/or central Anatolia.

Introduction

Alişar Höyük is a large tell site about 45 km from Yozgat, located near the source of the Konak and Delice Su, rivers that join the Kızılırmak to the west. A creek flows past the site and into the Konak Su.[2] As one of two large tells in the region it is composed of two terraces, one measured 520 x 350 meters at the base with an average elevation of 5-8 meters above the valley and the other, Mound A measured at 245 x 145 meters at the base with the highest elevation at 24.25 m. Three other mounds were named, B-D, and several tumuli are found in the surrounding region. Excavations first began at the site in 1927 with the work of H.H. von der Osten and E.F. Schmidt continuing until 1936. The excavations were published in several volumes as well as in several articles, though after 1932 much went undocumented.

Research at the site of Alişar Höyük currently falls under the purview of the Alişar Regional Project which was directed until recently by Ronald Gorny, from the University of Chicago, and is now led by Gregory McMahon. Within the Alişar Regional Survey project area there are a few other mounds, which are, or possibly are, also the location of Early Bronze Age and earlier settlements: Çadır Höyük (currently being excavated), Büyük Ören

[1] The classification of the figurines presented in this paper is as defined in the author's 2012 dissertation, which created a typology of almost 2000 figurines from Chalcolithic and Early Bronze Age Anatolia and the Balkans.

[2] Von der Osten & Schmidt 1932 (1927 I): 44; see image on page 45.

Höyük, Salur Höyük, Küçük Höyük, Orta Höyük, and Otlu Höyük;[3] yet besides Yarıkkaya[4] and probably Alişar Höyük, no sites on the north-central plateau are known to have been occupied during the fifth millennium or earlier.

Confusion over the conclusions of the 1927 to mid-1930s excavation of Alişar Höyük,[5] and biases caused by the resulting relative dates established in relation to Mesopotamia led to major difficulties with the stratigraphy and typological schemes in north-central Anatolia which many have since tried to clarify.[6] As the first major excavation in north-central Anatolia to have levels assigned to the Late Chalcolithic, the findings at Alişar Höyük unavoidably skewed the dating of later excavated sites in the region. For example, those who worked in central Turkey assumed that the absence of Late Chalcolithic Mesopotamian cultures in central Anatolia, as observed in the sequence of Alişar Höyük, meant that there were no sites with habitations earlier than 3000 BC in central Anatolia.[7] This was despite the fact that beneath the Early Bronze II (dated c. 2500 BC at the time) levels at Alişar Höyük there were twenty meters of other occupational layers.

Given the proliferation of excavation both in Turkey and in countries neighboring Turkey since Alişar Höyük's excavation the time is overdue for a reevaluation of Alişar Höyük's stratigraphy and finds. This can be done with a view to the site's role in regional and interregional networks during prehistory. My recent work with the anthropomorphic figurines from Alişar Höyük made it clear how far reaching those networks were, from southeast Europe to central Anatolia during the Late Chalcolithic. Delving into the collections of the Oriental Institute alerted me to previously unpublished and, in some cases, uninventoried figurines from Alişar Höyük necessitating their reevaluation and publication. The 115-20 anthropomorphic clay figurines that were excavated at Alişar Höyük are essential to the story of communication in the region.[8]

Part of the difficultly in understanding Alişar Höyük's role in regional networks is due to the nomenclature for the site's levels, for it has had both Chalcolithic and Copper Age levels, as well as several levels renumbered and renamed in the course of excavations (Table 1). Sharon Steadman has noted that, von der Osten's ascription of Copper Age to levels 11-10M was due more to the fact that copper objects first appeared in these levels than to an impression or conclusion about the date of these levels.[9] Later, the term Chalcolithic was used to apply to levels thought to be Neolithic because copper traces were found in level 18M.[10] In fact, the pottery styles do not change from level 15-11M and there just is not a large enough well-stratified sample size from each level to compose a ceramic sequence.

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[3] Gorny, McMahon, Paley, Steadman & Verhaaren 1999: 161.

[4] Hauptmann 1969.

[5] Steadman, Ross, McMahon & Gorny 2008: 73.

[6] Van den Hout 1984; Steadman & McMahon 2011; Schoop 2005.

[7] Özdoğan 1996.

[8] Five of the figurines are too fragmentary to determine if they are figurines, a rhyton, or perhaps some other figural object, but they do have some of the characteristics of figurines.

[9] Steadman, Ross, McMahon & Gorny 2008: 73.

[10] Von der Osten 1937 (1930-2 I): 30.

Many people have suggested, in fact, that Alişar Höyük's Copper Age levels belong to the Middle to Late Chalcolithic[11], though more often they are assigned to the Early Bronze Age.

The excavation process itself was hindered by the depth of the Chalcolithic and Copper Age levels from the surface of the tell; it was as much as 30.4 meters in some places.[12] The oldest layers had to be excavated using a basket and pulley system. Levels 19-15M, belonging to the Late Chalcolithic, were excavated in a smaller than 5 x 5 meter excavation area. Levels 14-12M, also belonging to the Late Chalcolithic, came from a small trench of less than 20 x 10 meters.

Defining the beginning of the Early Bronze Age levels at Alişar Höyük is also not without its difficulties.[13] Though generally heavily red slipped handmade vessels are thought to belong to the Early Bronze Age, Von der Osten had insisted that they were first found in the Copper Age levels, 11-10M, of Alişar Höyük. Thus they are not a good marker of chronology. Were these levels instead to date to the Early Bronze Age, the black burnished ceramics, which were also found in these levels, would make drawing any distinction between the Chalcolithic and the Early Bronze Age almost impossible. By correlating the levels of Alişar Höyük and the more recently excavated Çadır Höyük, for which radiocarbon dates are available, we can begin to unravel the confusion surrounding Alişar Höyük and in the region in general.

Since the material from the Chalcolithic levels 19-15M at Alişar Höyük and the Chalcolithic levels at the more recently excavated Çadır Höyük seem to be well correlated, the excavators of Çadır Höyük suggest that Alişar Höyük's Chalcolithic levels 14-12M be re-dated to the Transitional/Early Bronze I sequence defined by Çadır Höyük, placing them c. 3300/3100 BC-3000 BC.[14] This date is based on calibrated radiocarbon dates taken by the Çadır Höyük team and is generally supported by Ulf Schoop's extensive relative chronology of the regional Anatolian Chalcolithic, but Schoop's work on the chronology of sites within the bend of the Kızılırmak shows that level 12M material from Alişar Höyük is better dated prior to 3400 BC.[15] The simultaneous presence of unburnished and unpainted coarse wares, painted and incised decoration and black burnished wares in these levels, wares also found in the Chalcolithic, would seem to corroborate the assertion that there is a transitional phase between the Chalcolithic and the Early Bronze Age proper, perhaps elucidating the problems of overlapping ceramic forms and decoration first noted in von der Osten's work. Alişar Höyük levels 11-10M would then be pushed to the later Early Bronze I or Early Bronze II. The work of Schoop shows that none of the material from Alişar Höyük should be dated earlier than 5000 BC, based on the correlation of the site's material with others in the region.[16]

My own analysis of the ceramics at Alişar Höyük has so far been limited to the collection at the Oriental Institute in Chicago, but does potentially confirm the suggestions of other scholars noted above that indicates an earlier date for many of the levels. Of

[11] Steadman, McMahon & Ross 2007: 386; Thissen 1993; Parzinger 1993.

[12] Özdoğan 1997: 5.

[13] Steadman, Ross, McMahon & Gorny 2008: 73.

[14] Steadman, Ross, McMahon & Gorny 2008: 53.

[15] Schoop 2005: 82-84, 88-93, and 331-334.

[16] Schoop 2005: 331.

particular note are the possible graphite wares and black burnished wares with white paint which are particularly prevalent in levels 19-12M.[17] These are significant, because graphite decoration is a trait typical in Bulgaria, northern Greece, and southern Romania, between 4500 BC and 3500 BC, by which time it had gradually disappeared.[18] Roodenberg has also pointed out to two pieces of possibly Hungarian pottery from Alişar Höyük,[19] further illustrating ties between the site and eastern Europe before the Early Bronze Age.

Other significant pieces include a piece of black ware originally dated to the Early Bronze Age that may have belonged to the head of a hollow anthropomorphic vessel or figure (A158375 Figure 1a). Besides one possibly similar piece from Alişar Höyük itself (though this one, c2052, is dated to the Middle Bronze Age and made from a red or beige ware),[20] the closest comparanda for this piece comes from the northern Anatolian site of İkiztepe,[21] but the type is far more common in the Balkans during the Late Chalcolithic in the Karanovo IV-Gumelnitsa-Kojadermen complex; one example from the site of Vinitsa even has the same type of incised circular eyes[22] A10631 also has its closest comparanda at İkiztepe and Troy, though a somewhat similar piece was found at the Romanian site of Vidra (Figure 1b).[23]

A complete analysis of the finds from Alişar Höyük, would require a visit to the depot of the Anatolian Civilizations Museum in Ankara, however, the figurines from Alişar Höyük provide a wealth of chronological associations that are perhaps more potent than those for the pottery.[24] By examining what was still in storage at the Oriental Institute, in the form of artifacts and archive material, I am able to demonstrate the necessity and worth of examining the less accessible and still uncatalogued and unpublished material in Ankara. Simply by visiting the Oriental Institute's archives and collections I was able to determine that at least 120 anthropomorphic figurines were found at the site, eleven of which were never published previously and add to our knowledge of Chalcolithic and Early Bronze Age networks.

The classes and subclasses of figurines from Alişar Höyük are detailed below in order of their frequency of appearance at Alişar Höyük, from less frequent to more so. The distribution of figurines belonging to these classes is listed at the end of the article in the Appendix. One caveat, this is an analysis of the clay anthropomorphic figurines and therefore not all the figurines from Alişar Höyük will be disscussed here. Some figurines, especially from the later periods, for example, are made of stone, lead, bronze, and faiance. These will only be mentioned when they are relevant to the clay examples. Museum registration numbers for Alişar Höyük figurines and comparanda are given when publication information is not available.

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[17] The author gave a presentation on the subject of graphite at Alişar Höyük at the 2014 Annual Meeting of the Archaeological Institute of America.

[18] Leshtakov 2005.

[19] Roodenberg 1995: 122.

[20] Von der Osten 1937 (1930-2 II): fig. 234 c2052; Von der Osten 1937 (1930-2 III): fig. 269 c2052.

[21] Alkim et al. 2003: pl. 83.3.

[22] *Vinitsa* Shumen Museum #7589.

[23] İkiztepe Alkim et al. 2003: pl. 57.1.

[24] My initial visit to Ankara only yielded one figurine to examine.

Class A[25]

Class A figurines are probably the weakest class of figurines. Two of this class have been found at Alişar Höyük, though many sherds with similar markings and concave form can be found in the Oriental Institute's collections (Figure 2a). It is a weak class because no exact example has been found yet with a head, so to call it a figurine is difficult. There is every indication, however, that a head once adorned the top of the most complete pieces found at Alişar Höyük. The fabric of the pieces even matches that of two figurine heads, for which no body has been found (Figure 16). Below the broken necks is a rattle with incised designs filled with the remnants of a white paste. Both bear an incised "X" across their lozenge-shaped chest as well as punctated designs, and incision with circumscribed the neck area. They also both indicate the feet in a very subtle way, with a slight indentation in the bottom. Several rattles similar to these come from the site of İkiztepe, but none of these bears a head, so whether they belong to the same class is difficult to say.

Development

One of these figurines or rattles from Alişar Höyük is dated by the excavator to the Copper Age, from about 3000 BC by today's standards, and the other to the Middle Bronze Age, or 2000 BC.[26] The most similar rattles to these come from İkiztepe, but do not have an anthropomorphic form (Figure 2b).[27] They do, however, have incisions filled with white paste like the Alişar Höyük examples.

The only other contemporaneous rattle type from Anatolia belongs to a class that is found in its greatest number at the site of Demircihüyük in northwest Anatolia. The bodies there are spherical rather than ovoid and the heads are flat in the front and back, set on long necks. Inside each are clay pellets that rattle when the piece is shaken. They lack arms, a representation of breasts, and at Demircihüyük facial features. One figurine from Drama in Bulgarian Thrace and one from Geangoieşti in south-central Romania may also be examples of this Class, though their heads are more three-dimensional.

The best comparanda for this Class is a kind of rattle found in Moldova.[28] Rattles are not confined to the anthropomorphic form as an animal-shaped rattle comes from the site of Pietrele in south-central Romania dating to the Late Chalcolithic.[29] The more northerly examples of this Class along with the Moldova figurine, however, differ from the Demircihüyük group in the three-dimensional representation of the head. This three-dimensionality of the head seems, therefore, to be an eastern Balkan trait.

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[25] These classes were determined using a computer analysis of the figurines found in the author's dissertation. For clarification, those classes according to the dissertation are defined in the footnotes; class A here, was Class V in the dissertation (Martino 2012: Chapter 4, 169-171).

[26] The wild variation in the dating of these two figurines, which are so clearly related, and a lack of this Class in any other period suggest that we ought take a closer look at the material culture that coincides with them at Alişar Höyük.

[27] Bilgi 2008b.

[28] Passek 1954: 94 fig. 49.

[29] Hansen et al. 2005: fig. 90.

The examples from Troy may be the latest of this Class since the rattling in these is caused by metal balls.[30] That being said, the rattle from Troy with a deliberate hole through the top, finds its closest parallel in Moldova as well.

Class B[31]

Figurines from Class B are distinguished by their T-shaped base and the absence of a head, though that absence is due in large part to past damage and not to the objects' original design (Figure 3). One example of this Class from İkiztepe has a metal insert in the neck which may once have held a head,[32] and two others have a hole for a head in one end - one from Norşuntepe and one from İkiztepe.[33] Only one figurine of this class has been found at Alişar Höyük, but this is not surprising giving the Class' rarity elsewhere.

Development

The Alişar Höyük example has been dated to the first half of the Middle Bronze Age, however all the examples of this Class from İkiztepe were dated by the excavator to Early Bronze II, which would, given more recent publications and work regarding the site's dating, almost certainly place them during or at the end of the Late Chalcolithic.[34] The Norşuntepe example is dated to EBAI and said to be related to the "violin-idol" type discussed in Class F.[35] Since there are no figurines of this Class prior to or after these five examples, one must presume for now, that the Class dates from the Late Chalcolithic at the earliest and the Early Bronze Age at the latest. This Class is confined, almost entirely, to north-central Anatolia and proves another link between the coastal Pontic and inland areas of northern Anatolia. A predecessor of this type may be found in the figurines from Hacilar Level VI known as 'schematised clay figurines with wooden peg heads',[36] thereby establishing links to sites further west in Anatolia, but much earlier c. 6000 BC and therefore no direct link can be established. The Hacilar figurines are also much more three-dimensional, with their buttocks indicated.

Class C[37] **(3)**

Class C figurines all have separated, modeled legs, and most notably have pointed heads and appliqué decoration, particularly of the eyes (Figure 4a). Three of the figurines in this Class have a modeled penis, and the other six do not have an otherwise marked pubic

[30] Schliemann 1968: 413, fig. 486-7. These were found at depths of 23 and 20 feet, respectively.

[31] Class VIII in the dissertation (Martino 2012: Chapter 4, 183-184).

[32] Bilgi 1986: pl. 81.28.

[33] *Norşuntepe* Schmidt 2002: pl. 71.1171; *İkiztepe* Bilgi 1986: pl. 81.27.

[34] Welton 2011; Schoop 2005; Zimmermann 2007; Thissen 1993; Parzinger 1993; Nikolov 1998.

[35] Schmidt 2002: 92.

[36] Mellaart 1970: pl. 233.

[37] Class XVI in the dissertation (Martino 2012: Chapter 4, 199-201).

area. It is possible, therefore, that this head shape should be associated with male figurines. All 9-10 examples of this type which have so far been found come from Alişar Höyük.[38]

Development

This Class is known only from Alişar Höyük. It was dated to the Middle Bronze Age, the period of the Hittites, by the excavators.[39] While this may be accurate, the pointed head, alone, cannot be considered a Hittite marker, since Chalcolithic figurines from the Balkans have a similarly pointed head and appliqué eyes, and Middle Chalcolithic figurines from Can Hasan also have similarly pointed heads (probably coming from a Mesopotamian tradition).[40] To further confuse the timeframe of this head type, figurines with pointed heads appear at Hacilar in Level VI, Early Chalcolithic,[41] and at Kültepe c. 1900 BC associated with the Assyrian Colonies period. Moreover, Alişar Höyük b2055 is unique due to the presence of a cavity in the back, a practice found in the Balkans during the Neolithic and Chalcolithic (Figure 4b).[42] There are no close comparisons to the Class C figurines in the rest of the Hittite world, metal figurines and rock reliefs offer few similarities, so, while it would be difficult to say that these figurines date to a time as early as the Early Bronze Age given their find location during the Alişar Höyük excavations, ascribing them all to the Hittite cultural period seems premature.

The strongest argument for the ascription of the figurines to the Hittite period comes from comparison with the flat lead figurines from Alişar Höyük,[43] one of which wears "Hittite shoes". However, there are no clay figurines of any class at Alişar Höyük that appear to wear "Hittite shoes". Neither are any of the garments on clay figurines decorated like the lead figurines. The pointed head is a marker of many of the lead figurines, but none are decorated like those found on the clay figurines. e583 and c2052 come closest to appearing like the heads of the lead figurines, but no body accompanies them.

Class D[44]

The basic Class D figurine is composed of a figure with a circular head, stump arms, and either a semicircular bottom or articulated legs (Figure 5). The most common base is the semicircular one, as used in Subclasses a-c. Figurines belonging to Subclass a are made of clay and decorated with incision and/or indentation; figurines in Subclass b tend to be made of stone or bone and are simpler, having virtually no decoration. Subclass c is like b

[38] The exact number is not clear, because one is listed in the registrar books without an associate image.

[39] Von der Osten & Schmidt 1932 (1927 II): 35-36; Von der Osten 1937 (1930-2 II): fig. 231. The one possible exception is from Vidra (Rosetti 1938: pl. 13.13). This one shares similarities with the Alişar Höyük group, including the appliqué eyes and elongated head, but is not an exact match.

[40] French 2010: 6 fig. 11.

[41] Mellaart 1970: pl. 196.

[42] Examples come from Sadievo (Museum #919) and Smyadovo (Museum #4026) and can be found, respectively, in the Shumen and Nova Zagora Museums in Bulgaria.

[43] Von der Osten 1937 (1930-2 II): 191-193, fig. 230.

[44] Class I in the dissertation (Martino 2012: Chapter 4, 141-153).

in its simplicity, but its members are generally made of clay. The faces are distinguished by a nose shaped through pinching or modeling, a common characteristic of Balkan figurines. Subclasses, d and e, are distinct because they indicate the presence of legs, either separated, as in the case of Subclass e, or coming together in a heart shape as for Subclass f. Class D has so often been discussed before in other guises that many references are made below to previous literature.

Subclass a

This Subclass is found from southeast Europe to central Anatolia. Alişar Höyük has two to five figurines belonging to this Subclass. Figurines belonging to Subclass a are all made of clay, with the possible exception of a bone piece on display in the Nova Zagora Museum, and decorated with incision and/or indentation. Their decoration usually emphasizes the pubic area, chest, and facial features above all else. Sometimes the breasts are indented, while other times they are incised.

More information is available for Subclass a than for any other Subclass, because so many come from the well-published site of Demircihüyük. In the work of other scholars this Subclass is composed of a couple different types. From Demircihüyük all the circular heads of Obladen-Kauder's Groups A and B fit into Subclass a as do the bodies with semicircular bottoms that fall into Group Ia. Due to differences in surface treatment, Group B heads are said to go exclusively with Group II bodies.[45] Those bodies have separated legs and are seated. Slightly over 70% of the figurines from Demircihüyük are made from a fine clay, and only 10% are unfired.[46] The heads of Group A and the bodies of Group I are brown in color.[47] There is some overlap between the Demircihüyük Groups Ia/A and Ib/A; Alişar b250 and d114 belong to the same type as group Ia/A, though only the color for b250 is noted in the excavation catalog and it is gray. This overlap is observed in Maciej Makowski's 2005 article on the Early Bronze Age figurines of Anatolia.

Makowski, who compiled the most complete typology of Early Bronze Age figurines in Anatolia, would describe this study's Subclass a as consisting of three separate types, types C.I, E.I.2, and D.I (Figure 6). Figurines of type E come from sites in the north-central Plateau and according to Makowski belong to the violin-shaped category.[48] I see a large difference, however, between the decorated E.I.2 type with a semicircular base and E.I.2, which is only made in metal and has legs and an indication of the ears. I also see a substantial difference between the legged version of C.I versus the one with a semicircular base; the version with a semicircular base has absolutely no indication of legs.

When comparing Subclass a to Obladen-Kauder's typology, all of her Group A and B heads fit into it as do the bodies that fall into her Group Ia and Group Ib.[49] Therefore,

[45] Obladen-Kauder 1996: 260-261.

[46] Obladen-Kauder 1996: 272, 274.

[47] Obladen-Kauder 1996: 275. The heads of Group C and bodies of Group II have a red hue.

[48] Makowski 2005: 14-15.

[49] Her Class Ib bodies corresponds to my Class Hb.

these legged versions of Class D are here called Subclasses d and e. Though one might also include the seated Demircihüyük figurines into this Class, based on the similarity of decoration, the heads for seated figurines are so distinct as to suggest the creation of an entirely different Class. They are, therefore not discussed here, especially as no figurines of that Class appear at Alişar Höyük.

Subclass b

There are one to three Subclass b figurines from Alişar Höyük. Figurines in Subclass b tend to be made of stone or bone and are simpler than Subclass a, having almost no decoration. The lack of decoration along with the fact that the heads and bases are the same circular shape and the arms are not well preserved, makes it difficult to recognize this Class from the broken fragments. Furthermore, the Class Fc figurines have the same semicircular base. When they are recognizable, however, figurines of this Subclass appear from the Late Chalcolithic until at least the end of the Early Bronze Age. They come from the temple in layer XVIIb of Beycesultan as well as from layers XVIIc-XIII. They are also found in Late Chalcolithic layers at Aphrodisias where there was also found a figurine of this Class in lead.[50]

Though Subclass b is particularly prevalent at western Anatolian sites, it also appears at the site of Dimini in northern Greece in the Late Chalcolithic.[51] While all Subclass b figurines fit into the same Obladen-Kauder categories as Subclass a, they fit into type B.I.2 in Makowski's typology. As will be discussed in more detail further on, these figurines may suggest an Aegean route of contact between the eastern Balkans and Anatolia, a route that is further supported by the distribution of the Kylia class of figurine.[52]

One variant of this Subclass may be the head with an outcropping variously described as a horn or element of hair decoration, but this type does not appear in central Anatolia. Obladen-Kauder suggested that these heads from Susuz Höyük near Afyon, Beycesultan, and Karataş-Semayük belong to the Group B head type.[53] This kind of head seems to be confined to western Anatolia.

Subclass c

Alişar Höyük has one to four figurines of this Subclass. Subclass c is not discussed by Makowski or Obladen-Kauder. Subclass c is generally made of clay. The heads have a nose shaped through pinching or modeling. This Class is limited to the Late Chalcolithic and does not extend into the Early Bronze Age. The assignment of some figurines from Alişar to this Subclass is tentative because the arms are broken away, therefore they are

[50] Joukowsky 1986: fig. 274 and 400.15. Similar figurines of unknown provenience were found in the vicinity of Burdur (Istanbul Museum), Manisa (Manisa Museum), and Yalvaç (Yalvaç Museum) (Obladen-Kauder 1996: 277).

[51] Müller-Karpe 1968: pl. 133.

[52] Since Kylia figurines are only made in stone and bone and do not appear at any of the corpus sites, this class will not be discussed here. Takaoğlu 2005; Makowski 2005: 8-9; Seeher 1992b.

[53] Obladen-Kauder 1996: 278.

only considered to be possible members of the Subclass. Unfortunately, only one figurine of this Subclass found at Alişar can be assigned with confidence. Its closest comparanda is found in the Balkans, especially at the sites of Ruse and Sitagroi.[54]

Subclass e and f

These two Subclasses are discussed together because they differ little from each other. In both the legs are indicated through modeling and/or incision. The figurines are identical to Subclass a in shape and decoration. The legs of Subclass e remain separate down to the feet, but the legs of Subclass f come together at the base. Considering the small number available, the distribution of Subclass e is similar to that for the other subclasses of Class D, with concentrations in western and central Anatolia. Alişar Höyük has one or two figurines belonging to Subclass e. Examples of Subclass f figurines are confined to northwestern Anatolia, but its small numbers make this observation less reliable. Subclasses d and e correspond to Obladen-Kauder's Group Ib (legged-bodies) as well as her Group A and B heads and Makowski's type C.I, D.I, and E.I.2 legged versions. As with Subclass a then (similarly tied to types C.I and E.I.2, Makowski), these Subclasses date to EB I and II with their origin in the borderland between the Central Plateau and western Anatolia.[55]

Development

Class D is best known from the site of Demircihüyük in northwest Anatolia near modern day Eskişehir. The date for the levels producing figurines places all 223 pieces within the Early Bronze Age, with just under 60% coming from well stratified layers.[56] An extensive study done by Obladen-Kauder divides the site's figurines into several subtypes, first by head and body since so few of the figurines are complete. This corpus is augmented by a few figurines from the cemetery of Demircihüyük-Sarıket coming from graves of both adults and children. Some of the graves had up to three figurines, sometimes made of stone rather than clay.[57]

Anatolian precedents for the cross found on the chests of many of these figurines can be seen as early as figurines from Chalcolithic layer I of Hacılar.[58] The motif of the bands crossing the chest is also seen in contemporaneous or slightly later figurines from the Vinča culture.[59] White incrustation often found on these figurines, as at Babaköy in grave XIV,[60] and at Demircihüyük (Figure 4.14), is of particular interest.[61] It is a technique first used on figurines and pottery in the eastern Balkans during the Neolithic, becoming widespread in

[54] *Ruse* Georgiev & Angelov 1957: fig. 64.3. *Sitagroi* Renfrew et al. 1986: 278 fig. 9.137. *Kapitan Dimitrievo* Museum number 2913e.

[55] Makowski 2005: 13-14.

[56] Obladen-Kauder 1996: 272.

[57] Seeher 1992a: fig. 7.3-4; Aydıngün & Ekinci 1999: 29-31.

[58] Obladen-Kauder 1996: 271. *Hacılar* Mellaart 1970: pl. 246.3.

[59] *Vinča* Hansen 2007: pl. 494.

[60] Obladen-Kauder 1996: 275; Bittel 1939.

[61] The many indentations found on the figurines may represent tattooing (Korfmann 1979: 195ff.).

Anatolia during the Early Bronze Age.[62] Some of the Demircihüyük figurines in this Class are similar to figurines from Çaykenar near Antalya and at the end of the Late Chalcolithic in Romania and Hungary, specifically at the sites of Turdaş and Ózd (Figure 7a).[63]

The relationship between Class D and Balkan predecessors has been noted by many,[64] but it is argued that the anthropomorphic figurines from Anatolia have their origin in local Late Chalcolithic traditions. While it is true that schematic figurines do appear both then and earlier, they are entirely different from Early Bronze Age examples of Class D. The flatness of the Class D figurines finds its only predecessors in the Chalcolithic stone, bone, and a few clay figurines from the eastern Balkans (Figure 7b).[65] Mehmet Özdoğan has observed that the Early Bronze Age shift in western Anatolia from the more three-dimensional figurines to a more flat profile occurs in the Balkans as early as the Middle Neolithic.[66] One stray bone figurine seems to have made its way as far south as Knossos.[67] Seyitömer Höyüğü, Troy, Demircihüyük, İkiztepe, Poliochni and Alaca Höyük have also produced a few bone figurines, though all have been dated to the Early Bronze Age and are quite rare.[68]

Obladen-Kauder gave three additional reasons for thinking that this figurine Class was a local Anatolian development: the large numbers of figurines found in Anatolia; the fact that their stylistic development takes place locally without big jumps in either form or decoration, and that several stylistic types from surrounding Anatolian areas are combined at Demircihüyük. Since Class D, along with all figurines, is virtually absent from the eastern Balkans in the Early Bronze Age, finding precedents only among Late Chalcolithic bone, stone, and clay figurines from the Balkans, it seems safe to conclude that although this Class developed in its full complexity in northwest Anatolia, it began in the eastern Balkans.[69]

Fifteen heads of Class D come from good contexts in layer H of Demircihüyük, placing them in the Early Bronze I phase of the site.[70] They are also concentrated in layers K1 and K2 and L and M, which gives a rough end of use date of the beginning of Early Bronze II. Thereafter finds of this Class are isolated. The appearance of this figurine in such an early phase would make it relatively early for Anatolia. Demircihüyük does have sparse evidence of a Late Chalcolithic occupation in phases A-C, but no architecture or figurines.

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[62] Thissen 1993: 216, 226 and further; Chapman & Gaydarska 2007: 32-34.

[63] Obladen-Kauder 1996: 276; Roman 1977: pl. 51.12. This particular variation is called type D.I by Makowski (2005: 14).

[64] Makowski 2005: 18; Bittel & Otto 1939: 26ff.; Obladen-Kauder 1996: 272.

[65] Höckmann noted the antecedents in the Balkans, but did not believe that one could reconcile the obvious differences in dating (1977: 176). For more on this type, see Boyadjiev 2007.

[66] Özdoğan 2001: 317-8.

[67] Ucko 1968: fig. 105.35.

[68] *Seyitömer Höyüğü* Topbaş 1994. *Troy* Schliemann 1968: fig. 199-200, 221-223. *Poliochni and Troy* Marangou 1997b: fig. 1-2. *Demircihüyük phase F Room 6* Obladen-Kauder 1996: 308 pl. 151.1 and 2. *Alaca Höyük* Koşay 1951: 48 pl. 107.5. *İkiztepe* Alkım et al. 1988: pl. 41; Bilgi 2000: fig. 9.

[69] The two known examples outside of this area are one from the underwater excavations at Kiten (unpublished) and another example of from an EH III context at Lerna (Koka 1990; Caskey 1955).

[70] The only in situ complete figurine of this Class was found in room 5 of phase F (Obladen-Kauder 1996: 272).

The possible origin of these figurines in earlier levels, however, cannot be completely discounted.

While Obladen-Kauder suggests that the bodies of her Group Ia and Ib, the heads of her Group A, and the complete figurines of her Group Ia/A and Ib/A originate in central Anatolia, she also observes that this class appears at other central Anatolian sties in Early Bronze II contexts,[71] making them later than many of the Demircihüyük ones in northwest Anatolia. Makowski has similarly suggested that this Class originates in the borderland between the Central Plateau and western Anatolia.[72]

Makowski's Early Bronze Age date for these figurines comes exclusively from the relative stratigraphy of the Alaca Höyük tombs where all the figurines with a distinct head were found in the Early Bronze III tombs. From this, Makowski dates the headless or stump variety to Early Bronze I-II. No other figurines of this kind have a secure context. The dating of the Alaca Höyük tombs, however, is much debated,[73] particularly by Thissen, who, on the basis of Balkan comparanda, especially the flat metal figurines, suggests a re-dating of some of the tomb contents and settlements to the Chalcolithic. Furthermore, as a rule, the dating of objects found in tombs is notoriously problematic.

Whether this Class begins in central Anatolia or western Anatolia is of central importance to reconstructing the route of interaction in the Late Chalcolithic period between the Balkans and Anatolia. If this Class appears earlier in western Anatolia, it might suggest a western route, but if it appears earlier in central Anatolia, a route that included the Black Sea would be more likely. This latter route would also take advantage of the earlier connections established in the Middle Chalcolithic along the Black Sea Coast. Since Class D is less common in central Anatolia than more roundly modeled classes, I would suggest that Class D took the westerly route, beginning with the appearance of bone figurines at the beginning of the Late Chalcolithic. Then, it made its way by means of the Black Sea to İkiztepe by the end of the Late Chalcolithic, only reaching central Anatolia, except sporadically, during the Early Bronze Age.

Class E[74]

Class E is a class designated for one kind of foot (Figures 8). This foot class appears only as a fragmentary example on its own, and without a body. While it may once have belonged to a complete hollow anthropomorphic figurine, there are few examples of such figurines and they are each quite distinct (Figure 9). While it may seem simplistic to assign a whole class to a foot type there are distinguishing characteristics which are not found in other classes. The feet are hollow, generally have a dark gray interior and a burnished exterior, and each foot is formed separately from any other foot that might have existed.

[71] Etiyokuşu, Koçumbeli, Alaca Höyük, Karaoğlan, Alişar Höyük, and Ahlatlıbel (Obladen-Kauder 1996: 277-8).

[72] Makowski 2005: 13-14.

[73] Thissen 1993: 221.

[74] Class X in the dissertation (Martino 2012: Chapter 4, 185-177).

This Class is known at at least three sites in north-central Bulgaria and Bulgarian Thrace as well as at İkiztepe in Anatolia. Unfortunately, the Class has so few characteristics that it cannot be better defined.

Since there was a tradition in the northern areas of Bulgaria and southern Romania of producing individual parts of the body, like feet without the rest of the body, it is possible that, in some cases, these feet never belonged to a body,[75] or, once broken from a larger body they were kept as a memento. This would certainly explain why the hollow bodies that might belong to these feet have never been found at sites with this Class. They are found only in Bulgaria, southern Romania, and north central Anatolia. One Chalcolithic figurine of this class has been found at Alişar Höyük and it clearly once belonged to a larger figure. The Hittite Shoe variety described below, of which there are 16-18,[76] may be a later development of this type (Figure 8b).

Development

The one piece from Alişar Höyük which is dated to the Chalcolithic has little to no context, having only the vague designation of GK 2/13 3/3 and never being published. It is most closely related, however, to feet found in Bulgaria, particularly at the site of Smyadovo, which are also dated to the Late Chalcolithic, Smyadovo Horizon III.[77] The Alişar Höyük example, however, shows the beginnings of the upper figure, unlike the rest in this group. As suggested above, this upper figure may have appeared like examples from Late Chalcolithic southeast Europe. Though the shape of the lower body as it appears on the Alişar Höyük example makes it most like this group, there are also more block-like anthropomorphic figures with similar feet, which show communicative ties between Thrace and the eastern most part of Hungary.[78] This is especially evident in a couple hollow anthropomorphic vessels and figures from Aşağı Pınar and Toptepe in eastern Thrace which date to the Middle Chalcolithic.[79]

All of the other examples from Alişar Höyük are dated to the Middle Bronze Age and are made of a significantly different fabric sometimes called "Copper Ware". This ware is characterized by a much larger amount of mica than found in other contemporaneous or earlier wares, particularly in the slip, which, with its golden gleam might be of the biotite variety. One of the pieces dated to the Middle Bronze Age at Alişar Höyük (d1119), however, bears an incised circle design reminiscent of designs found on the ankles of Chalcolithic Bulgarian figurines (Figure 10 Smyadovo Museum #6590).[80]

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[75] Simon & Serbanescu 1987.

[76] Eighteen shoes of this shape have been found, but according to Von der Osten, two may have been rhytons (334 and 1671). Additionally, this number is the result of an inventory of the Oriental Institute collection and known published artifacts and does not include numerous pieces that might exist in the collections of the Anatolian Civilizations Museum in Ankara.

[77] In a personal communication, Rosiţa Mitkova has indicated that this type is common in Bulgaria during the Late Chalcolithic, during the Karanovo-Gumelnitsa-Kodjadermen VI period.

[78] Hansen 2007: 380. From Starçevo-Körös, Tisza and Karanovo I-II contexts.

[79] Özdoğan 2008; Özdoğan et al. 1998: 153-154 fig. 9a-b.

[80] *Căscioarele* Ştefan 1925: fig. 23. *Smyadovo* Mitkova & Popov forthcoming: #31, 80 fig. 8, Horizon III.

The Hittite shoe is a type of shoe with an upturned toe that has so far been viewed as characteristic of the Middle Bronze Age and Hittite culture in particular, explaining the type's appearance on monumental reliefs, such as found at Zincirli.[81] Though the "Hittite shoe" type becomes more prevalent during the Hittite period, it is certainly not the only type of footwear found on Hittite figures; they also wore sandals (sometimes with upturned toes) or go barefoot. Nor is the shoe type confined only to the Hittite ruling region, but examples have been found in Urartian areas as well.[82] In addition, much earlier examples of this shoe type have been found in the Near East. An arsenical bronze statue attributed to the Proto-Elamite period of modern day Iran, and thus c. 3000 BC, also bears the same footwear. Rather, this is a shoe type typical of and necessary to mountainous groups,[83] of which Smyadovo could be considered one (Figure 10). If Smyadovo Shumen Museum #3470 were to end in the pointy toe known from the so-called "Hittite shoe" examples of Alişar Höyük, as it seems to, there would be another link between the two regions. One piece from the central Anatolian site of Can Hasan proves that this type need not be associated with later periods in Anatolia. It comes from Can Hasan layer 2B dating it to the Middle Chalcolithic.[84]

d1618 might belong to Class E and may be a "Hittite shoe", but it differs considerably from the others in that it is decorated with a dark brown paint on its buff surface.[85] It is said to be similar to 3360.[86] Several examples with this type of painting are held at the Museum of Anatolian Civilizations in Ankara and dated not to the Hittite, but the Assyrian Colonies period just prior c. 1900 BC, from Kültepe. Many of these appear to have been rhytons rather than part of a complete hollow figurine.

Class F[87]

Class F figurines have a stump or stalk-like head and a semicircular base. Three Subclasses can be identified and examples of each can be found at Alişar Höyük (Figure 11). Subclass a is generally made of clay and often bears an incised X across its torso, while Subclass b is generally lacking in all decoration and often made of stone. Both of these Subclasses also have no indication of arms. Subclass c, however, does have arms indicated, but has the same bottom and top formation as the first two Subclasses. This Subclass is usually made of stone and generally lacks decoration. Because Class F shares a stalk-like head and, from a two-dimensional perspective, a semicircular base and a globular base with Class A, these may have a similar development. Five figurines of this class have been found at Alişar Höyük, with another six possible; it is unclear because they are broken.

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[81] Vieyra 1955: pl. 78-80.

[82] Akurgal 1959.

[83] Alexander 1986: 64.

[84] French 2010: 42 fig. 31.01.

[85] Von der Osten 1937 (1930-2 II): 410, fig. 474.

[86] Von der Osten & Schmidt 1932 (1927 II): frontispiece.

[87] Class VI in the dissertation (Martino 2012: Chapter 4, 171-176).

Subclass a

This Subclass is found in central Anatolia and with two to seven examples coming from Alişar Höyük, dated by the excavator to the Copper Age, from about 3500-2900 BC. All of the figurines in this Subclass are made of clay and bear an "X" on their torso. Of note are the two figurines from the sites of Ózd in Hungary and Turdaş in Romania, which were mentioned above.[88]

Subclass b

This Subclass is found from the Aegean to central Anatolia and is sometimes known as a "pebble" figurine, especially in the Aegean. Generally these figurines are made of stone and bear no decoration of any kind. Though the three or four examples from Alişar Höyük are dated to the Late Chalcolithic, those coming from Thermi III are dated to the Early Bronze Age c. 3000 BC.[89]

Subclass c

One sure figurine of this Subclass comes from Alişar Höyük, with another possible. Subclass c is also composed of mostly unadorned stone figurines, but these have outstretched arms. The Subclass is known more generally as the "violin idol",[90] a type which has been especially noted in the Cyclades, but can be found from the Cyclades to central Iran .[91] In the Cyclades they date to c. 4000-3000 BC and they are more often likely to be incised just around the neck and waist. Subclass c, therefore is either the most prolific and far reaching of the subclasses (in any of the classes), or its design is so universal as to not be a precise tool for analyzing interconnections between sites.

In Anatolia, Subclass c is particularly prevalent at the site of Beycesultan where most of the figurines were found together in the so-called shrine of Stratum XVII B.[92] Höckmann suggests that this Subclass, like all Early Bronze sculpture of Anatolia, developed out of the less schematic "corpulent crouching female" that are typical of the Neolithic and Early Chalcolithic.[93] There is, however, no direct evidence to support this theory of their development.

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[88] *Turdaş* Hansen 2007: pl. 497.1. *Ózd* Hansen 2007: pl. 497.2.

[89] Höckmann 1977: 175-176.

[90] Renfrew noted that the simultaneous appearance of this Subclass along with more naturalistic figurines "should forever dispel the notion of a unilineal evolution from a schematic to a "developed" representation, or of the converse, from "developed" to "schematic" (1969: 9). These violin idols are distinct from the Balkan bone "violin-idols" of the Late Chalcolithic (Voinea 2008).

[91] Renfrew 1969; Hansen 2007: pl. 43.16-8 and 44.6.

[92] Lloyd & Mellaart 1962: 33 fig. F.1 and pl. 32.

[93] Höckmann 1977: 182.

Development

Makowski assigned this entire class to his Styles G, E, and B and specifically types G.II.1, G.III, E.I.1, B.I.1. It is not clear why he separates type G.III from type G.II.1 since they both exhibit the same stalk-like head. The only clear difference is the use of incision to depict facial features in place of modeling through pinching, although he does not make this distinction. Makowski suggests that there is a naturalistic type belonging to Style G, made of alabaster and depicting seated figures.[94] The only similarity between these and the others of this Style, however, is the occasional triangular, pyramid-shaped head. I therefore do not see a close relationship between this naturalistic version and the more schematic one.

Makowski's chart indicates a developmental relationship between E.I.1 and G.II.1. B.I.1 on the other hand differs little from E.I.1 and Style G except for the complete lack of decoration and its slightly earlier attribution, Early Bronze I. There is, however, no connection made between Styles B and G. Taking all of these styles into consideration, this Class, according to Makowski, should be dated to Early Bronze I-II for the B.I.1 group, Early Bronze II-III for E.I.1 and G.II.1, and G.III to Early Bronze III. Höckmann, however, dates the beginning of every one of my Class F subclasses to Early Bronze I and even suggests the possible beginning of this class in the Late Neolithic of Greece, with examples from Saliagos.[95] Furthermore, the site of Aphrodisias has one possible example dated to the Late Chalcolithic and other Subclass b figurines coming from Early Bronze I and Middle Bronze levels.

Renfrew's 1969 discussion of Cycladic figurine types provides a much more detailed description of this Class and divides it into many more Subclasses, but according to his work, the basic form of this Class begins as early as 3500 BC, agreeing with the Höckmann's suggestion that the Class begins in Late Neolithic Greece and with the date of the earliest Aphrodisias find.[96] Given the absence of these figurines at sites in mainland Greece and Balkan countries farther north and the general absence of figurines in the Balkans between 3500 and 2600 BC, the appearance of this Class in the Cyclades and Anatolia may be related to the radical cultural changes evident in the archaeological record at this time. Furthermore, the appearance of the Class in the Aegean and Anatolia points to a shift in the concentration of "Figurine culture", because these are among the earliest figurines to appear in western Anatolia. The figurines from Ózd and Turdaş, have alternatively been dated no later than c. 3300/3200 BC, and no earlier than 2600 BC. So, on the one hand, they could act as prototypes for the Anatolia examples for Subclass a, representing the last vestiges of figurine culture in the Balkans before the middle of the Early Bronze Age when trade and contact between the Balkans and western Anatolia resumes and figurines appear again in the Balkans. On the other hand, they may be derivative of the early pieces from north-central Anatolia, which are themselves related to Late Chalcolithic figurines from the Aegean.

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[94] Makowski 2005: 16; Karamete 1938: 207, pl. 3.21; Özgüç 1963: 12, pl. 3.

[95] Höckmann 1977; 177-178; Evans & Renfrew 1968: 63, pl. 43, fig. 76.1 and possibly 76.2-3.

[96] Renfrew 1969: 5-9.

Class G[97]

Class G is has a semicircular base with a somewhat three-dimensional rendering of the head and feet as well as occasionally articulated arms (Figure 12). These figurines have either stump-like arms or arms that reach forward to touch the sides of the breasts. Makowski only briefly mentions the existence this Class. Examples of the Class are rare, appearing only at Alişar Höyük and maybe Dündartepe. The one possible piece from Dündartepe does not necessarily belong to Class G because the arms and head, unlike all those from Alişar Höyük, are point downward, and the head is flat with incisions. 8-12 figurines of this class have been found at Alişar Höyük.

Development

Since there are so few members in this Class outside of Alişar Höyük itself, it is difficult to speak of any kind of development within the Class or to create Subclasses. It is possible that this Class developed out of Class F, given the similarity of general shape and the excavators' attribution of the Class to the Middle Bronze Age. One might also suggest that Class G developed out of Class D if the Middle Bronze Age date for the group at Alişar Höyük is correct. The Dündartepe example might then be a precursor to the general Class, explaining the difference in head type.

Class H[98]

Figurines of Class H can be divided into five Subclasses that are tied together by their plain round cylindrical torsos (Figure 13). The Subclasses are distinguished by the presence or absence of arms, a belly, or a conical base. The heads of the members of this Class are of two kinds. One is simply pinched with generally no other facial features besides the nose. The other is also simply pinched, but differs in that, even with the pinching, the head retains the cylindrical shape of the torso. Todorova has noted that the pinched head types – three-sided heads – as well as cylindrical-bodied figurines are typical of the early part of the Late Chalcolithic in Bulgaria, c. 4600-4000 BC.[99] In the Balkans, Class H figurines tend to be burnished, if they have any decorative treatment of the surface. No members found in Anatolia display clear evidence of burnishing. 10-19 figurines of this class have been found at Alişar Höyük and they all belong to Subclasses c and d. The other Subclasses are described to illustrate the breadth of the class and are ordered based on the number of sites at which the figurines have been found.

[97] Class IX in the dissertation (Martino 2012: Chapter 4, 184-185).

[98] Class VII in the dissertation (Martino 2012: Chapter 4, 176-182).

[99] Todorova et al. 1983: 94.

Subclass a

This Subclass is found from north-central Anatolia to central Bulgaria, and dates to the Late Chalcolithic in Anatolia, with the possible exceptions of one figurine from Aşağı Pınar and two from Troy. Examples from the Balkans date to the Middle to Late Chalcolithic. The two most common variations of this Subclass include the addition of a hump on the back or crude incisions on the front. There are a few incisions on these figurines those that there are tend to indicate sexuality. Examples with incisions tend to have more facial features indicated as well. Eyes are often defined by two horizontal lines, and the belly is often inscribed by a shape that at its base is rectangular and is topped by two side-by-side inverted arches. The incised examples are found primarily in Thrace.

One piece from İkiztepe is a good example of the kind of figurine that some have called androgynous.[100] Both breast and a penis are evident on the figure. Rather than such a figurine being androgynous, however, one might consider that simple breasts are not only an indicator of femininity, but also of the pectorals of a male.

Subclass b

This is the simplest of the Subclasses, never decorated with any kind of incision. The belly of this Subclass is so far extended from the rest of the body that it may be a representation of pregnancy. It is this feature that distinguishes it from the other Subclasses. Subclass b ranges from central to eastern Bulgaria, and is found most frequently in the Bulgarian Thrace and the Black Sea coast. There are no examples of this Subclass in Anatolia. All the Balkan examples date to the Middle to Late Chalcolithic c. 5500-4000 BC.

Subclass c

The arms of this Subclass either reach forward, to the sides, upwards, or a combination of these, and the body is more conical than cylindrical. Nine to eighteen examples of this type come from Alişar Höyük. An example from İkiztepe is one of the rare clearly male figurines. It closely resembles a figurine from Vidra in Romania.[101] Subclass c is among the most chronologically difficult to assess. Attributed dates range from the Late Chalcolithic in the Balkans to the very beginning of the Middle Bronze Age in Anatolia. The distribution of this Subclass is wide, from western Bulgaria (concentrated in central Bulgaria and Thrace) to north central Anatolia. Makowski discusses this class briefly saying that the gesture of forward reaching arms is a trait of the Middle Bronze Age.[102] Unfortunately, apart from Alişar Höyük, no other Middle Bronze Age sites in Anatolia have produced figurines having this gesture. Makowski can only point to examples made in metal or found on seals and then, it is the headdress that he emphasizes, not anything else about the figure. In fact, this

[100] Samsun Museum #I/03-49.

[101] The presence of breasts on the İkiztepe figurine does not negate its masculinity, but does suggest that the piece may be androgynous. See Özdoğan 2001 and Hansen 2007: 378-379 for more on the attribution of sex to figurines. *Vidra* Rosetti 1938: pl. 19.7.

[102] Makowski 2005: 20.

gesture has also been found on figurines from Syria during the Early Bronze Age. There is no evidence that they are related. Moreover, one figurine of this Subclass comes from a Late Chalcolithic context at Büyük Güllecek near Alişar Höyük.

Subclass d

This is the simplest of the Class H Subclasses and only one comes from Alişar Höyük. It has the same cylindrical body and pinched form for the nose, but instead of having arms, the body merges directly into the head. Because of its simplicity, it is not easily distinguished from the other classes. Subclass d has the same spatial range as Subclass c but has fewer examples in Anatolia. The largest number of this Subclass was found at Drama in Bulgarian Thrace.[103] While examples of this Subclass in the Balkans are dated from the Middle to Late Chalcolithic, those from İkiztepe are all dated to Early Bronze I by the excavator. The suggested revised dating would make the figurines from İkiztepe contemporary with the Late Chalcolithic examples in the Balkans.[104]

This Subclass would seem to be formally related to the three-dimensional figurines made of bone, which are often called prismatic bone idols. These first appear in the Late Chalcolithic.[105] Biehl calls this Statue type I of the bone variety and has documented eighty-four of this type. Sixty-seven percent of these have two holes in the side of the head that probably denote ears. Biehl notes their similarity to the Drama-Merdžumekja Subclass e figurines as evidence in favor of their being an anthropomorphic figure. The bone figurines generally range in size from 4 to 7.5cm. They are made from the foot bones of a large animal.[106] Only in a few of these examples have indentations for eyes. Prismatic bone figurines are less frequently found in Thrace than the clay examples of Subclass e[107] and have never been found in Anatolia.

Subclass e

Subclass e is the most dissimilar of the Subclasses in Class H, but shares the same conical body shape as Subclass c. In all but a few cases, for example one from Gradeshnitsa and a few from Can Hasan,[108] the head of the figure is distinguished by little more than a stump, and there are no arms. It is simply a conical form with a hollowed base.

At Demircihüyük and other sites in Anatolia figurines of this Subclass are known as spielsteine, or game pieces, which can appear more or less like a human figure.[109] This name is derived from their formal similarity to pieces used in the Egyptian board game Senet.[110]

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[103] Krastev & Bertemes 1988: 241-266; Fol, Katincharov & Lichardus 1988a: 151-180.

[104] Martino 2012: Chapter 2.

[105] Nikolov 2006: 117; Biehl 2003: 184-188, 207-208, fig. 13a and 18c; Comşa 1984.

[106] Mikov 1935: 201-202.

[107] All examples of this group are found in domestic contexts (Biehl 2003: 186).

[108] *Gradeshnitsa* Biehl 2003: pl. 12.377; Nikolov 1974: fig. 36. *Can Hasan* French 2010: 3-6 fig. 12-13.

[109] Schmidt 2002: 90, 94-95; Obladen-Kauder 1996: 255-256.

[110] The origin for the Egyptian game is dated to sometime around 3000 BC (Froschauer 2004).

There is, however, no evidence for such games in Anatolia or the Balkans. Examples from Norşuntepe come in many varieties, several of them bearing decoration not seen elsewhere.

Besides the four to eleven Early Bronze Age examples from Demircihüyük,[111] there are 129 published examples of this Subclass found at Norşuntepe, only two of which date to the Chalcolithic.[112] The rest of them date to Early Bronze II. The majority of the other figurines of Subclass f come from Chalcolithic levels of sites in southern Romania where their similarity to figures from the Egyptian game Senet has also been noted.[113] Schmidt does note the similarity between the Balkan examples and those from Early Bronze Age Anatolia, while still calling them Spielsteine.[114] My search through the materials at the Oriental Institute yielded one example of this type from Alişar Höyük that had not yet been published.

Development

Several examples of this Class from the Early Bronze Age come from sites in Anatolia, including the above mentioned one from İkiztepe. This indicates the continuity of this Class from Late Chalcolithic to the Early Bronze Age. The radiocarbon dating of Thermi would seem to show that this class exists even into the Middle Bronze Age, but of the three radiocarbon dates taken from the site, the most recent two come from an eroded profile on the sea shore.[115] Lamb himself noted the striking similarity between the Thermi figurines and those from Late Chalcolithic Bulgarian contexts, though at Lamb's time they were dated to the Early or Middle Bronze Age.[116] Vassil Nikolov has also shown that the conical bodies made from one piece of clay begin as early as the Neolithic in Thrace.[117] Added to this is the connection between Early Bronze Age Subclass f pieces in Anatolia and Bulgaria and the appearance of another Thermi III figurine type at Norşuntepe in level 33, Late Chalcolithic c. 4000 BC, which Schmidt likens to a Hungarian type of figurine.[118]

Figurines Without Classes

Some of the anthropomorphic figurines from Alişar Höyük are too fragmentary, have too little information about them or are two few to belong to or define a Class. Additionally, the unique nature of the following, as well as their often crude manufacture makes their assignation to a class already described in this paper or in others difficult, so most are described singly below.

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[111] Obladen Kauder assigns all of the Plate 108 figurines from numbers 7-15 to this group, but numbers 7-12 are so simplistic as to make the suggestion that they are figurines a little doubtful.

[112] Schmidt 2002: 90, 94-95.

[113] Markevich 1981: 20, fig. 13.

[114] Schmidt 2002: 95. See Liste 12/12-18.

[115] Begemann, Schmitt-Strecker & Pernika 1992: 221; for the older, unpublished sample see Korfmann 1987: pl. 18.

[116] Lamb 1936: 149-156; see also Höckmann 1968: 112.

[117] Nikolov 2006: 51.

[118] Schmidt 2002: 93, see fn. 736 for reference to the Late Chalcolithic Hungarian site of Szolnok.

Unpublished

Some figurines could only be found in the excavation registrars held by the Oriental Institute, which makes them difficult to classify. The class to which b1436 belongs cannot be determined, because there is almost no information about it. The only record I was able to find was in the 1929 site registrar. It is described simply as having a light gray exterior, extremely large ears, and a long sharp-edged nose. Similarly, there is little information about b2245 except for that contained in the 1929 site registrar: a head with pointed ears.

There is a little more information about the following, but only because there is an archival photo in the records of the Oriental Institute and some notes on the object card created (Figure 14). Unfortunately, in the case of d1699, it is not clear whether this is a figurine at all.

b1408 seems related to Class C and Class D in head shape, due to the combination of bump at the top of the head found in b250 and d114 and the large pinched ears and applique eyes. The body, on the other hand is more like Class G, to which b1930 belongs. b1406 may belong to the same Class as b1408, but only its head remains. Furthermore, only an archival photo could be found of the piece, so little analysis could be done.

b2367 is only a head. It is broad and flat in the back and has a deep indent in the area of the right eye. The original registrar notes from 1929 say it has a light gray back and light brown front and a granular texture to the clay. It was clearly broken at the neck in antiquity.

b2633 and b1610 are only seen in archival photos. It may be that these are rhytons, but they appear to be anthropomorphic in character, so they might instead be anthropomorphic vessels or hollow figurines. They are both hollow and have eyes and noses depicted in relief. They seem much like hollow anthropomorphic heads found in Bulgaria and are also in a fragmentary condition.[119]

A6280 was never published and never given a number other than by the Oriental Institute, so that is how it will be referred to here. It appears to be a foot with two incised toes at the base, which may once have belonged to an animal figurine, but could just as easily have belonged to a human figurine. It is broken just above the calf area.

A10841 is also just a leg piece, but may in this case have always been so and it was also never given a number other than by the Oriental Institute, so that is how it will be referred to here. The top is pinched as if it ended there naturally and the rest has a crude form.

Published (Figures 15-17)

Unlike the above, the following were published, but with little or no information and, even to this day, they do not correspond to any known classes of figurines in Anatolia. d2696 is described in the excavation object card notes as a seated human figure with a

[119] *Golyamo Delchevo* Todorova et al. 1975: pl. 71.2. *Vinitsa* Shumen Museum #7589. *Ruse* Georgiev & Angelov 1952: fig. 168.1, fig. 167.1.

bird head and one broken leg.[120] The only archival photo of the piece is not any better than the published one. This piece was dated by the excavator to MB II and found in square T-30. Like d2696, e1934 has a bird-like face, but the body has an erect rather than seated position.[121] Furthermore, e1934 is dated much later, to Alişar Höyük level V1 the Post-Hittite-Phrygian period, and was found in Plot O-12 Level 4c M. It is made of fine buff ware and is heavily fired.

e1793 was found in Plot L-12 Level 4c M, i.e. the same level as e1934, and was therefore also dated to Alişar Höyük level V1 the Post-Hittite-Phrygian period.[122] It was not described, but has a cylindrical shape with vertical incisions, circumscribing the figurine at intervals (on the body and head), which appear to be made using a stab and drag technique. The eyes seems to have been impressed by fingertips and the nose is articulated. A horizontal line circles the neck.

e1743, is noted to have an eye and nose indicated and is said to be like c2492, a zoomorphic figurine but is really too fragmentary to say for sure.[123] It is made of a gray ware. The date to which it was attributed was period AI, when it was found in the I-15 level transition, level 13. An image was not published, so we are left with the description in the museum registrar only.

e1443 is described in the object card notes as an "Ishtar" figure, made of a very fine buff ware, heavily fired, and made by pressing two blobs of clay together.[124] It was found with e1442 which appears to belong to Class C. The object card for e1442 notes that it was found in p/q-0/1, which may have been a refuse pit, and dated to the MB II period.

c677 is assigned to Class H as a possible member, due to its cylindrical form, but it is quite unique from other figurines in that class.[125] It was found in plot J-29 level 370-410 and dated to the MB II period. Von der Osten suggested it represented a woman wearing a cylindrical headdress. It seems most similar to a piece excavated from Dispilio, Greece.[126]

d2345 would have been assigned to Class D, according to Von der Osten.[127] Aydıngün & Hodder, also noted this figure's similarity to Class D figurines thereby dating it to EB II-III.[128] However, it differs significantly from most members of that class in its decoration. For example, it has an incised and indented navel as well as some sort of headdress, applique breasts and eyes and indentations in those appliques. It also has arms that reach forward. Given its characteristics d2345 is more like figurines found in Class G, though it fits into

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[120] Von der Osten 1937 (1930-2 II): fig. 232 d2696.

[121] Von der Osten 1937 (1930-2 II): fig. 474 e1934; Von der Osten 1937 (1930-2 III): fig. 269 e1934.

[122] Von der Osten 1937 (1930-2 III): fig. 269 e1793; Von der Osten 1937 (1930-32 II): fig. e1793.

[123] Von der Osten 1937 (1930-2 I): 81, 106.

[124] Von der Osten 1937 (1930-32 II): fig. 231 e1443.

[125] Von der Osten 1937 (1930-2 II): fig. 231 e677; Von der Osten 1937 (1930-2 III): fig. 269 e677.

[126] Marangou 1997: fig. 1d.

[127] Von der Osten 1937 (1930-2 III): fig. 269 d2345; Von der Osten 1937 (1930-2 I): fig. 183; Müller-Karpe 1974: pl. 302.5.

[128] Şentürk & Aydıngün 2006: 124 pl. 37.

neither Class G nor Class D easily. It was found in plot L-33/34 level A II and originally dated to the MB II period.

e864 was found in a refuse pile, but dated to the Copper Age due to its style.[129] It was composed of a medium fine ware. It is perhaps most similar to an example from İkiztepe, Samsun Museum #I/80-655, though several other similar examples with such a navel and a sketchily drawn pubic area come from İkiztepe.[130] Protruding navels are more common in the Neolithic, however, than they are in the Early Bronze Age, as the Copper Age of Alişar Höyük has now been dated. c2430 also has a protruding navel, but was is in a seated rather than standing position, like an example from Ruse in north central Bulgaria.[131] It was found in Plot U-29 level 240 and was dated to the MB II period.[132] According to the object card it had an oval base, black interior and buff slip. It also has many visible organic inclusion. 3183 was never published, but is also seated like c2430. It was found in Plot XXIX level 300. It appears that it may have also had a protruding navel.

e898 has similar characteristics to other Alişar Höyük figurines, with its applique circles for eyes and applique breasts, but the body shape seems unique.133 It was found along the east side of the Alişar Höyük city wall and dated to the MB II period. According to the object card it is made of a fine clay with traces of red wash and has a hollow body, though there is no description in the publication.

For b1297 and e1398 are similar in their simplicity. Only the head and torso are depicted, though b1297 also has applique eyes. 1297 has a gray exterior and was found in Stratum II.[134] e1398 was found in a refuse pit, P-0/1.[135] This piece is quite similar to one found at Aphrodisias in western Anatolia, dated to the Late Chalcolithic, but Von der Osten dated the piece c. 500 BC.[136]

1452 was found in Plot/Terrace XIV level 450 and dated to the MB II period.[137] It has a pinched nose, appliqué eyes, evidence of some polishing appliqué decoration and incision at neck, a black/gray exterior, a slightly rounded back of head, and possibly once had breasts and white paste. It is broken at the torso and the decoration does not continue on the rear. I know of no similar pieces.

d1683 comes from the destruction deposit below level 6M in O-11.[138] It is an anthropomorphic head, broken at the neck. The eye brows are incised and the eyes indented. Von der Osten and Schmidt dated it to the Copper Age. I know of no similar pieces.

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[129] Von der Osten 1937 (1930-2 I): fig. 183 e864; Von der Osten 1937 (1930-2 III): fig. 269 e864.

[130] Bilgi 1986: pl. 76.6, pl. 83.31; Bilgi 2000: fig. 4, 13; Bilgi 2001: 27 fig. 41b; Samsun Museum #s: I/82-141, I/00-19.

[131] Georgiev & Angelov 1952: fig. 162.2.

[132] Von der Osten 1937 (1930-2 II): fig. 232 d2430; Von der Osten 1937 (1930-2 III): fig. 269 d2696.

[133] Von der Osten 1937 (1930-2 II): fig. 232 e898; Von der Osten 1937 (1930-2 III): fig. 269 e898.

[134] Schmidt 1932 (1928-29 I): fig. 161; 1929.

[135] Von der Osten 1937 (1930-2 III): 88, fig. 88, 269 e1318.

[136] Joukowsky 1986: 552, fig. 397.27 #1519.10; fig. 217.

[137] Von der Osten & Schmidt 1932 (1927 II): 35-36, fig. 36, 1452; Von der Osten 1937 (1930-2 III): fig. 269, 1452.

[138] Von der Osten 1937 (1930-2 I): fig. 183, d1683; Von der Osten 1937 (1930-2 III): fig. 269, d1683.

b1718 is also just an anthropomorphic head broken at the neck.[139] It was found in sector EE19 level L2 high. The description in the 1929 excavation notes does not match the object, but seems closer to a description of e1443. Instead b1718 has a disc shaped head with circular applique lining the top edge of the head and circular applique eyes. It does not seem to have ears, but has some type of nose indicated and seems to be convex in the back. The closest comparanda appears to be a piece from Eskiyapar which is dated to the 17-16th century BC.[140]

2488 was published, but little was said about it and the photograph leaves something to be desired.[141] Plot XV level 620 was its find spot. It appears to be a head on a neck, below which it is broken. I know of no similar pieces.

2941 was published, but again little was said of it.[142] It was found in Plot/Terrace XXV level 420 and dated to the MB II period. It has a medallion-like circle on its chest, a belt, which the left arm reaches down to a possible penis. The other arm may reach up and the head is crudely formed. Little remains of figurine 2383, but it appears to be much like 2941, with the medallion-like circle in the center of its chest.[143] The exterior is a pinkish gray. Though it is quite worn it seems that originally on arm reached upward and the other downward. It was found in Plot/Terrace XIV level 450 and therefore quite close to 2941. Similarly it was dated to the MB II period.

3004 was published, but the only information given about it was its find location and that it was a female figurine.[144] It was found in Plot/Terrace XXIX level 180 and was dated to the MB II period.

c506 and e1940 cannot be assigned to a class, because the only thing that remains of them is their head (Figure 16a). c506 was found in Plot L-14, level 11/12 and dated to the Late Chalcolithic.[145] It has a black micaceous interior and exterior, four holes in each ear lobe, an indented mouth, possibly a crudely scratched eye, and a neck with the possible indication of a vertical hole in the interior. The vertical hole in the neck may once have held a stick that connected the separately formed head to a separately formed body. This technique is well known in southeast Europe.[146] It is worth noting, that while generally micaceous material is confined to the exterior of vessels from this period, i.e. the slip, the entire head and neck of this figurine is made of the same fabric.

e1940 has two ear holes on the left side and four holes in its right ear lobe, but only three on the right side are completely perforated.[147] It is also made from a micaceous, or

[139] Schmidt 1932 (1928-29 I): fig. 161, b1718.

[140] Museum of Anatolian Civilizations catalog 1997: 125, fig. 195.

[141] Von der Osten & Schmidt 1932 (1927 II): 35-36, fig. 36, 2488.

[142] Von der Osten & Schmidt 1932 (1927 II): 35-36, fig. 36, 2941; Von der Osten 1937 (1930-2 III): fig. 269, 2941.

[143] Von der Osten & Schmidt 1932 (1927 II): 35-36, fig. 36, 2383.

[144] Von der Osten & Schmidt 1932 (1927 II): 35.

[145] Von der Osten 1937 (1930-2 I): fig. 85, c506; Von der Osten 1937 (1930-2 III): fig. 269, c506.

[146] Marangou 1997a: 231.

[147] Von der Osten 1937 (1930-2 I): 78-81, fig. 85; Von der Osten 1937 (1930-2 III): fig. 269, e1940.

micafer clay, according to the object card, and heavily fired, but it is medium buff in color rather than black. It was found alongside the pottery type known as a fruitstand in plot L-15 level 14 and dated to the Late Chalcolithic, Alişar Höyük Ia, layers 14-12 according to Bittel in 1945, but EB II-III in 1950.[148]

The number of ear holes found in these two Late Chalcolithic examples from Alişar Höyük, which are thought to be Balkan imports, are paralleled by several Late Chalcolithic examples from Romanian and Bulgarian sites to the east of Gradeshnitsa (Figure 16b). [149] In fact, before the Late Chalcolithic, fewer ear holes were common in the Balkans, and it was only with the advent of the Late Chalcolithic that the number of ear holes began to frequently exceed two.[150]

1488 seems like a combination of Classes B and H (Figure 17).[151] It has the characteristic outstretching arms of Class B as well as the hole in the center of the neck, and the cylindrical body of Class H. It was found in Plot IV level 2.00 m and was dated to the Chalcolithic. The interior and exterior are gray.

The original registrar notes regarding b2058 remark that is like b1891 and 2055 (Figure 17).[152] It is, however, only a head and far more elaborately adorned than either. Indented applique circles circumscribe the head, one sits in the center of the brow, and two represent the eyes. It has a coarse gray interior fabric and a buff to brown exterior. It was found in Plot EE20 level L2R2 and dated to the MB II period. Because it is only a head, we cannot know if it was more like Class C or Class H Subclass c originally. The same can be said for b1891. That piece was found in plot HH10 level L2. A small hole marks the center of the head, at the brow, perhaps imitating the applique found on b2058, or marking where applique that once existed has since fallen. b1891 was also dated to the MB II period.

e454 appears to be a figurine, from the photo published in 1937, and is in fact said to be one, but nothing is said of it except that it is a human figurine that comes from Stratum II and therefore, the MB II period (Figure 17).[153]

b262 is unlike any other figurine (Figure 17).[154] It has a pillow shape with rectangular incisions on one side and was dated to the Copper Age, Alişar Höyük Period I. Unfortunately, little else was written about it except its coloring – grayish white with some brown.

[148] Bittel 1945.

[149] Von der Osten (1930-2 I) 1937, fig. 85 c506; Von der Osten 1937 (1930-2 I): 78-81, fig. 85.

[150] Nikolov 2006.

[151] Von der Osten & Schmidt 1932 (1927 II): 35-36, fig. 36, 1488.

[152] Schmidt 1932 (1928-9 I): fig. 159, b2058; Von der Osten 1937 (1930-2 III): fig. 269, b2058.

[153] Von der Osten 1937 (1930-32 II): fig. 231, e454.

[154] Schmidt 1932 (1928-29 I): fig. 62, b262; Von der Osten 1937 (1930-2 III): fig. 269.

CONCLUSION

The variety of figurines that cannot be classified at Alişar Höyük probalby has as much to do with the lack of sites excavated in central Anatolia with contemporaneous levels and excavated figurines as it does with the local nature of practices at Alişar Höyük. Two classes of figurines appear at no other site, Class C and Class G, both of which belong to the latter part of the Early Bronze Age or the beginning of the Middle Bronze Age. In the other cases, most of the comparanda come from at least as far away as the Turkish Black Sea Coast, the site of İkiztepe, not any of the neighboring sites, not even the Hittite capital of Bogazkoy. Connections with İkiztepe show that at least some sites in central Anatolia were in communication with the northern coast of Anatolia by the Early Bronze Age, despite the difficultty of crossing the Pontic mountains. Connections with Troy might show that there was some communication across the vast expanse of western Anatolia as well. The "Hittite shoes" on the other had, show a strong connection with cultural developments at Kültepe and more recently with the renewed excavations of the Middle Bronze Age levels of Seyitömer Höyüğü, perhaps proving the misnomer of the decriptive term.

Many of the anthropomorphic figurine traditions that developed at Alişar Höyük were, as far as we know, even after all these years of excavation in Turkey, unique and tied the site, but other traditions were tied into a large interregional network that seems to have extended as far as southeast Europe. As researchers we need to be conscious of local developments as well as those that tie sites to wider trends and traditions. The figurines were certainly not the only idea to cross or be taken through this network, but they stand out from most of the ceramics and other material goods at Alişar Höyük for which for there are many nearby comparanda.

Table 2 below, lists the origin of each class and subclass as well as the similarities with Balkan figurines that appear in the type but cannot be tied to a specific example. As one can see, other than the figurine classes which appear to be native and exclusive to Alişar Höyük, all the classes share similarities with or find predecessors in the Balkans. I propose a route for the reception of each class based on the known locations of the individual examples. Neither route is without proponents. Some have proposed the Aegean as the route through which the prehistoric cultures of southeast Europe built networks with Anatolia, however, a movement towards Anatolia vs. towards southeast Europe is proposed very infrequently.[155] Others have proposed the Black Sea as the route of transmission or at least one of the routes.[156] What I am proposing, based on the distribution of the figurines, is that there were several routes of connectedness that developed between the Balkans and Anatolia, all of which had a significant impact on the development of the Anatolian figurine traditions of the Early Bronze Age. Some routes led directly to north-central Anatolia, while others started in western Anatolia, coming through the Aegean, and made their way east.

[155] Şahoğlu 2005; Roodenberg 2001; Roodenberg & Thissen 2001. Takaoğlu 2006: 301 suggested that during the Neolithic some items/traditions might have been imported from southeast Europe to Turkey through the Troad.

[156] Nikolov 1998; Nikolov 2000; Nikolov 2010: 410; Steadman 1995; Coleman & Ballard 2004; Ballard et al. 2001.

While it has long been known that the dating of the levels at Alişar Höyük is suspect and that much of the material is mixed (the original excavators themselves noted as much) working with the material from Alişar Höyük is still worthwhile. Such work can provide new insights into the site's regional as well as interregional connections. There is not time in this paper to fully develop a picture of those connections, but a reexamination of all the finds from Alişar Höyük, especially those yet to be published could certainly lead to more insights. Not all discoveries need come from new excavations. There is much to learn from even the most problematic of sites excavated long ago. Hopefully this paper will be seen as a jumping off point for future research on previously excavated sites as well as an impetus for interest in the development and use of long distance networks during the Chalcolithic both to the east and west of central Anatolia.

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APPENDIX:
LIST OF FIGURINES BELONGING TO CLASSES AT ALIŞAR HÖYÜK AND COMPARANDA ELSEWHERE

Other figurines might well belong to the following classes, but they cannot be placed with as much certainty as those listed. Given the focus of this paper, however, those from Alişar Höyük which might belong to the groups are listed.

Class A: **Turkey** *Demircihüyük* Obladen-Kauder 1996: pl. 107.7-8, pl. 108.1-6. *Troy* Schliemann 1968 (1881): fig. 486-487. **Bulgaria** *Drama-Merdžumekja* Lichardus 1988a: fig. 99. **Romania** *Geangoieşti* Andreescu 2002: pl. 23.4. **Possibly** *Alişar Höyük* Von der Osten 1937 (1930-32 I): fig. 183, p. 180; fig. 183 c2435.

Class B: **Turkey** *Alişar Höyük* Von der Osten 1937 (1930-2 II): 283 fig. 308. *İkiztepe* Bilgi 1986: pl. 81.27; Bilgi 2001: 27 fig. 41; Samsun Museum #I/83-54. *Norşuntepe* Schmidt 2002: pl. 71.1171.

Class C: **Turkey** *Alişar Höyük* Von der Osten 1937 (1930-2 II): fig. 231 e596, e631, e917; Von der Osten and Schmidt 1932 (1927 II): 35-36 1576 (found with 1577). **Possibly** *Alişar Höyük* 1929 Museum Registrar b2243; Von der Osten 1937 (1930-2 II): fig. 234 e1442; Von der Osten and Schmidt 1932 (1927 II): 35-36 fig. 27 3143; Schmidt 1932 (1928-9 I): fig. 159 b2242; Von der Osten 1937 (1930-2 II): fig.234 e583, c2052.

Class D: **Turkey** Subclass a *Ahlatlıbel* Zübeyr 1934: 79-84; Aydıngün et al. 2006: pl. 32-33. *Alaca Höyük* Arik 1937: pl. 220-221; Koşay 1944: 142 pl.106 AI/a1-2; Koşay 1951: 48 pl. 107.3; Aydıngün et al. 2006: pl. 2; Bilgi 1972: 438; *Alişar Höyük* Bittel 1934: pl. 9.5; Schmidt 1932 (1928-9 I): fig.62 b751. *Aphrodisias* Joukowsky 1986: 220 fig. 245, 522 fig. 376.7. *Babaköy* Bittel 1939: 8 fig.6.3, 11 fig. 9.10. *Bademağacı Höyük* Duru 2008: fig. 341.1. *Bahçehisar* Efe 1994: 30. *Balıbağı* Süel 1989: 154 fig. 4. *Beycesultan* Kulaçoğlu 1992: 94 fig. 112, 95 fig. 113. *Büyük Güllücek* Koşay & Akok 1957: pl. 26.2. *Çaykenar* Aydıngün et al.

2006: pl. 15. *Demircihüyük* Bittel & Otto 1939: pl. 14.5b; Korfmann 1979: fig. 5.1; Korfmann 1980: 26; Korfmann 1981: 106.2, 106.5; Obladen-Kauder 1996: pl. 110.1, pl. 110.10-16, pl. 110.2, pl. 110.5-6, pl. 110.9, pl.111.2-3, pl. 111.5-8, pl. 112.10-11, pl. 112.2-9, pl. 113.1, pl. 113.3-4; Korfmann 1977/78: pl. 9.5; Obladen-Kauder 1996: 362 pl. 116.1-3, pl. 116.5-6, pl. 120.1-2. *Demircihüyük-Sarıket* Willeitner 1992: 310-318. *Etiyokuşu* Kansu 1940: fig. 81.7, 81.291. *Gözlü Kule* Goldman 1956: 334-335 pl.451.1. *İkiztepe* Bilgi 1986: pl. 78.12. *Kalınkaya* MAC 2000: 87 fig. 120. *Karayavşan* Tezcan 1966; Kulaçoğlu 1992: 79 fig. 90, 80 fig. 92. *Karaoğlan* Kulaçoğlu 1992: fig. 92. Obladen-Kauder 1996: 277 (mention of an unpublished figurine). *Karaoğlan Höyüğü* Aydıngün et al. 2006: pl. 51. *Karaoğlan Mevkii* Topbaş et al. 1998: fig. 50.101 & 87.101. *Kavaközü Höyüğü* Sivas 2008: fig. 1-3. *Koca Höyük* Mellaart 1954: 239.464. *Koçumbeli* Tezcan 1966: pl. 20, 32-33; Aydıngün et al. 2006: pl. 40-46; Middle East Technical University Museum #94.02.190. *Kusura* Lamb 1937: 29 fig. 11.1, 2; Lamb 1938: 251 fig.17.7; Aydıngün et al. 2006: pl. 21-22; Höckmann1977: 179 fig.180. *Külhöyük* Tezcan 1966. *Kültepe* Von der Osten, Bittel & McEwan 1933: 80-1 fig.71; Ormerod 1912-13: 59 fig. 6. *Küllüoba* Şahoğlu & Sotirakopoulou 2011: fig. 282. *Kuştepe Höyüğü* Sivas 2008: fig. 4-5. *Pazarlı* Koşay 1941. *Polatlı* Lloyd & Gökçe 1951: pl. 4c. *Troy* Schliemann 1967 (1884): 141 fig.70; Schliemann 1968 (1881): 331.193/191, 195/196, 576.130. *Uşak-Eynehan* Aydıngün et al. 2006: 48.46. *Yazıdere Höyüğü* Sivas 2008: fig. 10-11. **Aegean Islands** *Thermi* Lamb 1936: pl. 20.30-27. **Greece** *Tsangli* Müller 1929: pl. 3.60. **Bulgaria** *Nova Zagora* Bone figurine in Museum. *Kiten* Kiten Museum in Bulgaria. **Romania** *Pianul de Jos* Roman 1977: pl. 51.12. *Turdaş/Tordos* Hansen 2007: pl. 497.1. *Unirea* Hansen 2007: fig. 177. **Hungary** *Ózd* Hansen 2007: pl. 497.2. **Possibly** *Alişar Höyük* 1929 Museum Registrar b2189; Von der Osten 1937 (1930-2 I): 177-180 fig. 182; Von der Osten & Schmidt 1932 (1927 II): 35-36 fig. 36 12.

Subclass b **Turkey** *Alaca Höyük* Koşay 1944: 142 AI/a1-2. *Alişar Höyük* Von der Osten 1937 (1930-2 I): 177-180 fig. 182. *Aphrodisias* Joukowsky 1986: 214 fig. 233; 215 fig. 235; 288 fig. 274, 400.15 (lead). *Beycesultan* Bilgi 1977; Aydıngün et al. 2006: 62.59; Lloyd & Mellaart 1962: 35, 39, 55, 57 fig. 1.16-17, 19-21; Mellaart 1962: 266 fig. F.i.15-18. *Demircihüyük* Obladen-Kauder 1996: pl. 114.4; pl. 114.8-9, pl. 115.1, pl. 116.7. *Gavurtepe* Meriç 1990: 179-180 fig. 9. *Kaklık Mevkii* Topbaş et al. 1998: fig. 59.174?, 54.138, 69, p. 138?; 68, p. 109 & 51.109; Aydıngün et al. 2006: 152 M11. *Karaoğlan Mevkii*; Topbaş et al. 1998: fig. 65.101&107. *Karataş-Semayük* Bilgi 1977. *Kusura* Bilgi 1977; Mellaart 1954: 239.459; Aydıngün et al. 2006: 61 fig. 58, 151 pl.10; Lamb 1937: 251 fig.17.3; Lamb 1936: 29 fig. 11.6. *Kültepe* Bilgi 1975: pl. 4 fig. 14. *Kocaan Höyük* Aydıngün et al. 2006: pl. 9. *Maşat Höyük* Emre 1996: 41 fig. 65-66; 64 fig. 3, 6. *Seyitömer Höyüğü* Topbaş 1994: fig. 12; Aydıngün et al. 2006: pl. 165 M24; Topbaş 1992: fig. 11. *Susuz Höyük* Aydıngün et al. 2006: 148 pl. 7-8. *Troy* Schliemann 1968 (1881): 332.199-201, 602.1414; Dörpfeld 1902: 380 fig. 346a, b. *Yassıhöyük* Mellaart 1954: 239.461. *Yumuktepe* Garstang 1953: 217 fig. 136. **Greece** *Dimini* Müller 1929: pl. 4.85. *Tsangli* Wace & Thompson 1912: 124 fig.74a. **Possibly** *Alişar Höyük* Von der Osten 1937 (1930-2 I): 177-180 fig. 182; Oriental Institute Object Card c1061.

Subclass c **Turkey** *Alişar Höyük* Von der Osten 1937 (1930-2 I): fig. 85 c598. **Iraq** *Tell Kafajeh* Preusser 1932: 71-73 fig. 63. **Greece** *Makriyalos* Orphanide 1998: fig. 22. *Mandalo* Orphanide 1998: fig. 17. *Sitagroi* Gimbutas 1986: 278 fig. 9.137. **Possibly** *Alişar Höyük* Schmidt 1932 (1928-29 I): fig.161; Von der Osten 1937 (1930-2 II): fig. 231; 1929 Museum Registrar b2367.

Subclass d **Turkey** *Acemhöyük* Tezcan 1958, fig. 19a-b. *Alaca Höyük* Çorum Museum. *Alişar Höyük* Schmidt 1932 (1928-9 I): fig.183 d114. *Demircihüyük* Korfmann 1979: 31 fig. 5.4-5; Korfmann 1981: pl. 107.3; Obladen-Kauder 1996: pl. 118.1; pl.118.3-4; pl. 118.6-7; Korfmann 1977/78: fig. 20.2; Mellink 1977: 5. *Etiyokuşu* Kansu 1940: fig. 81.382, 290, 291. *Harmanören* Ünlüsoy 1993: fig. 11. *Hasmellerin Höyüğü* Sivas 2008: fig. 12-13. *İkiztepe* Bilgi 1986: pl. 76.4. *Karaoğlan* Anatolian Civilizations Museum. *Koçumbeli* Middle East Technical University in Ankara. *Maşat Tepe* Tokat Museum. *Yukarı Söğütönü* Efe 1992: 568, 572. *Zile* Tokat Museum. **Possibly** *Alişar Höyük* Schmidt 1932 (1928-9 I): fig.62 b250; Von der Osten 1937 (1930-2 III): fig.269 b250.

Subclass e **Turkey** *Tokat Museum* Orthmann 1966: 36 fig. 9A, 9B, pl. 3.1-2?, 3.3-4. *Demircihüyük* Obladen-Kauder 1996: pl. 118.8. *Kayaağzı Höyüğü* Sivas 2008: fig.14-15.

Class E: **Turkey** *Alişar Höyük* Von der Osten 1937 (1930-2 II): 174 fig. 216; Schmidt 1932 (1928-29 I): 133 fig. 164; Oriental Institute Collection A65690, A6183, A65690. *Can Hasan* French 2010: fig. 31.1-3, 6. *İkiztepe* Alkım et al. 2003: 21 pl. 12.9, 112.65. *Kültepe* Anatolian Civilizations Museum. *Seyitömer Höyüğü*

Bilgen 2011. **Bulgaria** *Ruse* Georgiev & Angelov 1957: fig.52.2. *Sadievo* Kanchev & Kancheva-Ruseva 1993: pl. 3.10. *Smyadovo* Shumen Museum #2802; Mitkova & Popov forthcoming: #24, 79 fig. 9. **Romania** *Cascioarele* Stefan 1925: fig. 23. *Gumelniţa* Hansen 2007: pl. 430.14. **Possibly** *Alişar Höyük* Von der Osten 1937 (1930-2 II): 174 fig. 216; Oriental Institute Archival Photo b1509, b2045, b2063; Schmidt 1932 (1928-29 I): 133.

Class F: Subclass a **Turkey** *Alaca Höyük* Korfmann 1986: 98 fig. 12. *Alişar Höyük* Schmidt 1932 (1928-29 I): 53 fig.62; Von der Osten 1937 (1930-2 I): fig. 182, 177-180 fig. 182. *Etiyokşu* Kansu 1940: 90 fig. 81 EY. 7, 91, EY.292. *Area around Kültepe* Von der Osten, Bittel & McEwan 1933: 80-81 KT-71. *Masat Höyük* Emre 1996: 15, 28 fig. 62 pl. XVII 1a-b. *Norşuntepe* Hauptmann 1979: pl. 33.1. **Iraq** *Yarim Tepe* Hansen 2007: pl. 36.12-3. **Possibly** *Alişar Höyük* Schmidt 1932 (1928-9 I): fig.62 b854; Von der Osten 1937 (1930-2 I): 177-180 fig.182; Von der Osten 1937 (1930-2 III): fig. 269 d1722; Von der Osten & Schmidt 1932 (1927 II): 35-36 fig. 36 12.

Subclass b **Turkey** *Alişar Höyük* Von der Osten 1937 (1930-2 III): fig. 269 b957; Von der Osten 1937 (1930-32 I): fig. 182 e805, e721. *Aphrodisias* Joukowsky 1986: 209-210 fig. 210-12, 216-7, 223, 403.7, and 560. *Çine-Tepecik* Günel 2008: 258 fig. 5. *Kusura* Alp 1965: 6 pl. 5. *Kültepe* Bilgi 1975: 209-216 pl. I fig. 6-13. *Mersin* Garstang 1953: 71 fig. 39. *Norşuntepe* Schmidt 2002: 69.1150-6. **Possibly** *Alişar Höyük* Von der Osten (1930-2 I) 1937: 177-180 fig. 182.

Subclass c **Turkey** *Alaca Höyük* Koşay 1951: pl. 162.Al.960. *Alişar Höyük* Von der Osten 1937 (1930-2 I): fig. 182 e1318. *Beycesultan* Mellaart 1962: 266 fig. 1-12; Lloyd & Mellaart 1962: 33, 35 fig. 1.1-14. *Çine-Tepecik* Günel 2008: 257 fig. 1-3. *Gavurtepe* Meriç 1993: 355-356, 360-361 fig. 2, 4. *Kültepe* Karamete 1938: 207 pl. 3.20; Bilgi 1975: 209, 212, 216, pl. I fig. 1-5; Von der Osten 1933: 80, 82 KT-49. *Yortan* Kamil 1982: 19 fig. 84.289. **Aegean Islands** *Amorgos* Thimme et al. 1977: cat. 35, 44, 47. *Antiparos* Thimme et al. 1977: cat. 30. *Euboea* Thimme et al. 1977: cat. 27-28. *Ios* Thimme et al. 1977: cat. 40. *Naxos* Doumas 1977: pl. 28i, 32h and i, 33c; Thimme et al. 1977: cat. 26. *Paros* Renfrew 1969.5 pl. 2d. *Saliagos* Evans and Renfrew 1968: 63 pl. 43 fig. 76.1. **Iran** *Tell Arpachiya* Hansen 2007: pl. 43.16-8. *Tepe Gawra* Hansen 2007: pl. 44.6. **Possibly** *Alişar Höyük* Schmidt 1932 (1928-9 I): fig. 62 b2182.

Class G: **Turkey** *Alişar Höyük* 1929 Museum Catalog b1696, b1930; Oriental Institute Object Card c1314; Von der Osten 1937 (1930-2 II): fig. 231 e132, p. 35-36 fig. 36 3361; Schmidt 1932 (1928-9 I): fig. 161 b1931, b1577/1577. **Possibly** *Alişar Höyük* Oriental Institute Object Card c1061; Von der Osten 1937 (1930-2 II): fig. 232 d2430, fig. 231 c634; Oriental Institute Archival Photo object 3183, object c408.

Class H: Subclass a **Turkey** *İkiztepe* Samsun Museum #I/84-373, I/94-49. *Troy* Schliemann 1968 (1881): 330 fig. 1991; Schliemann 1967 (1884): 142 fig. 71. **Bulgaria** *Golyamo Delchevo* Todorova et al. 1975: pl. 78.10, 79.12, 96.14, 97.12. *Gradeshnitsa* Nikolov 1974: fig. 36. *Kodjadermen* Popov 1911: 71 fig.1. *Ruse* Georgiev & Angelov 1957: fig. 67.2; Georgiev & Angelov 1952: fig. 162.1. *Sadievo* Nova Zagora Museum #252; Kanchev & Kancheva-Ruseva 1993: pl. 4.2, 5. *Sava* Höckmann 1968: 176, 182 ff11. *Slatino* Chohadjiev 2006: fig. 168.5, 173.3. *Smyadovo* Mitkova & Popov forthcoming: #13, 80 fig. 3 (this figure seems to cross Subclass a and b), #52, 83 fig. 1, #49, 81 fig.4; Mitkova & Popov forthcoming: #3, 16. *Stara Zagora* Stara Zagora Museum #1cz306. **Aegean Islands** *Thermi* Lamb 1936: pl. 20.29-1, pl. 22.30-31, 31-37, 31-12, 31-25, 29-2, 31-28, 30-11, 29-1, 31-41, 30-31, 32-25. **Romania** *Gumelniţa* Hansen 2007: pl. 430-432. *Mărgineni* Monah 1997: fig. 170.3. *Sultana* Bucharest National History Museum #SMR 09.1; Andreescu 2002: pl. 29.6. *Vidra* Rosetti 1938: pl. 15.2, pl. 15.8, pl. 15.4, pl. 17.11, pl. 18.1, pl. 19.3, pl. 15.1; Radunţçeva 1976: 43 fig. 1.

Subclass b **Bulgaria** *Drama-Merdžumekja* Hansen 2007: pl. 337.12; examples in the Kabile Museum of Bulgaria. *Golyamo Delchevo* Todorova et al. 1975: pl. 109.14, 110.14, pl. 72.6, 73.13, pl. 62.2, 63.13. *Ovcharovo* Todorova 1976: 121 fig. 6. *Ruse* Georgiev & Angelov 1957: fig. 66.1. *Sadievo* Nova Zagora Museum #919; Kanchev & Kancheva-Ruseva 1993: pl. 4.1, pl. 3.11, pl. 3.9, pl.4.4. *Smyadovo* Mitkova & Popov forthcoming: #13, 80 fig. 3 (this figure seems to cross Subclass a and b). *Stara Zagora* Stara Zagora Museum #cz166.

Subclass c **Turkey** *Alişar Höyük* Von der Osten 1937 (1930-2 II): 174 fig. 216, fig. 232 d919, 35-36 fig. 36 1445, 2894; Schmidt 1932 (1928-9 I): 128-132, fig.161 b672; Schmidt 1931: b2055, b2056, 1929 Museum Registrar 1577/b1237. *Büyük Güllecek* Koşay & Akok 1957: pl. 26.1b. *İkiztepe* Bilgi 2000: fig. 4. *Norşuntepe*

Schmidt 2002: pl. 72.1187 and 1189. **Aegean Islands** *Thermi* Lamb 1936: pl. 22.31-27, 30-1, 31-16, 30-4. **Bulgaria** *Ovcharovo* Todorova 1976: 121 fig. 6. *Ruse* Georgiev & Angelov 1957: fig. 62.4. *Sadievo* Kanchev & Kancheva-Ruseva 1993: pl. 4.10. *Smyadovo* Mitkova & Popov forthcoming: #11, 80 fig.2; Mitkova & Popov forthcoming: #17. *Stara Zagora* Stara Zagora Museum #1cz612. *Vinitsa* Radunţçeva 1976: 48 fig. 7. **Romania** *Sultana* Andreescu 2002: pl. 29.1. *Vidra* Rosetti 1938: pl. 16.12, pl.17.10, pl.17.8, pl.19.7. **Russia** *Dagestan* Vesselovsky 1910: 2 fig. 1. **Possibly** *Alişar Höyük* 1929 Museum b1202; Von der Osten 1937 (1930-32 II): fig. 231 e1667, e677, p. 35-36 fig. 27 3143, fig. 232 c1806, fig. 474 e1793; Schmidt 1932 (1928-9 I): fig. 161 b2447, fig. 159 b2475, b2242; Von der Osten & Schmidt 1932 (1927 II): 35.

Subclass d **Turkey** *Alişar Höyük* Oriental Institute Collection A65692. *İkiztepe* Samsun Museum #I/91-21a; Bilgi 2001: 26 fig. 24b. **Bulgaria** *Tell Berekets* Stara Zagora Museum #ber.m.690. *Drama-Merdžumekja* Hansen 2007: pl. 337.2-3 9-11, 13; examples in the Kabile Museum of Bulgaria. *Golyamo Delchevo* Todorova et al. 1975: pl. 96.12, 97.11, pl.78.3, 79.1. *Gradeshnitsa* Nikolov 1974: fig. 36. *Kodjadermen* Popov 1916-18: fig. 144b. *Ruse* Ruse Museum Display #8. *Sadievo* Kanchev & Kancheva-Ruseva 1993: pl. 4.3. *Smyadovo* Mitkova & Popov forthcoming: #53, 85 fig. 2. *Vinitsa* Radunţçeva 1976: 67 fig. 55.1. **Romania** *Hăbăşeşti* Dumitrescu et al. 1954: fig. 37.2-6, 11, 13. *Podei* Monah 1997: fig. 166.1. *Rauceşti-Munteni* Monah 1997: fig. 44.1-2. *Scănteia* Monah 1997: fig. 22.3, 23.15, 44.5, 7-8. *Truşeşti* Monah 1997: fig. 23.11. *Vidra* Rosetti 1938: pl. 13.3, pl.14.4.

Subclass e **Turkey** *Can Hasan* French 2010: fig. 11-12. *Demircihüyük* Obladen-Kauder 1996: pl. 108.15; Obladen-Kauder 1996: pl. 127.10. *Norşuntepe* Schmidt 2002: pl. 73.1191-1207, 74.1208-1218, 75.1220-1228. **Bulgaria** *Smyadovo* Mitkova & Popov forthcoming: 81 fig. 10. **Romania** *Hăbăşeşti* Dumitrescu et al. 1954: fig. 47.1-15, 48.13. *Scănteia* Monah 1997: fig. 228.6. *Truşeşti* Monah 1997: fig. 23.1-3, 8, 258.1. *Vermeşti* Monah 1997: fig. 23.8. **Moldova** *Stara Duruitor* Markevich 1981: fig. 13.6. **Hungary** *Fūzesabony-Gubakút* Raczky, Kovacs & Anders 1997: 171 fig. 46. **Iran** *Tepe Gawra* Tobler 1950: pl. 84c.

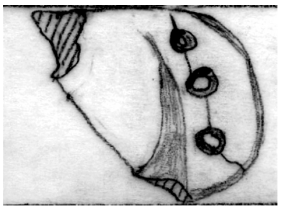
<table>
<tr><th>Time Periods</th><th>Alişar Periods</th><th>Strata</th><th>Meters of soil in layers</th><th>Levels of Mound</th><th>Levels of Terrace</th><th>Original Dating</th><th>Tentative Current Dating</th></tr>
<tr><td rowspan="2">Ottoman/ Seljuk</td><td rowspan="2">VII</td><td>VII</td><td>0.5</td><td rowspan="3">1</td><td rowspan="2">1</td><td rowspan="2">1040 AD</td><td></td></tr>
<tr><td>VI</td><td>1</td><td></td></tr>
<tr><td>Byzantine/ Roman 0-11th cen AD</td><td rowspan="2">VI</td><td>V</td><td>3</td><td>2-3</td><td rowspan="2">300 BC</td><td rowspan="2">550 BC-</td></tr>
<tr><td rowspan="2">Hellenistic 7th cen BC</td><td>IV</td><td>2.5</td><td rowspan="2">2-3</td><td rowspan="2">4-7</td></tr>
<tr><td>VI</td><td rowspan="2">II-III</td><td rowspan="2">3.0-2.5</td><td rowspan="3">1200 BC</td><td rowspan="3"></td></tr>
<tr><td>Post Hittite/ Phrygian</td><td rowspan="2">V</td><td rowspan="6">I</td><td rowspan="6">9</td><td>4a
4b
4c</td><td>8-9</td></tr>
<tr><td>Early Bronze Age/ Hittite Empires</td><td>IV</td><td></td><td>10-11</td><td>1400 BC</td><td>1600 BC</td></tr>
<tr><td></td><td>III</td><td>5-6</td><td>12</td><td>1750 BC</td><td>2000 BC</td></tr>
<tr><td rowspan="2">Copper Age</td><td rowspan="2">I-II & II-III</td><td>7-9</td><td rowspan="2">13-14</td><td>2500 BC</td><td>2800 BC</td></tr>
<tr><td>10-11</td><td rowspan="3">3500 BC</td><td>3000 BC</td></tr>
<tr><td rowspan="2">Chalcolithic</td><td rowspan="2">I</td><td>12-14</td><td rowspan="2"></td><td>3400 BC</td></tr>
<tr><td>15-19</td><td>5000 BC</td></tr>
</table>

Table 1. Changes to Alişar Höyük's chronology.

Figurine Class	*Date of Origin*	*Last Seen*	*Zone of Origin*	*When Seen in Anatolia*	*Route of Entry*	*Late Chalcolithic Balkan Figurine Parallels*
A	Late Chalcolithic	Early Bronze Age	Balkans, perhaps Moldova	Early Bronze Age	Aegean and/or Marmara	
B	Late Chalcolithic	Middle Bronze Age?	North-Central Anatolia	Early Bronze Age	Black Sea?	
C	Middle Bronze Age?	Middle Bronze Age?	North-Central Anatolia (inland)	-	-	Pointy head; cavity in back; applique eyes
Da	Late Chalcolithic	Early Bronze II	Northwest Anatolia	Late Chalcolithic	-	Cross on chest; flatness; tripartite shape
Db	Late Chalcolithic	Early Bronze Age	Aegean	Late Chalcolithic	Aegean and Black Sea	
Dc	Late Chalcolithic	Late Chalcolithic	Eastern Balkans	Late Chalcolithic	Aegean and/or Marmara	Pinched nose; flatness; tripartite shape
Dd	Late Chalcolithic	Early Bronze II	Central Plateau of Anatolia	Late Chalcolithic	-	
De and f	Early Bronze I	Early Bronze II	Central Plateau of Anatolia	Early Bronze I	-	
E	Late Chalcolithic	Early Bronze Age?	North-Central Bulgaria and South-Central Romania	Early Bronze Age	Black Sea	
Fa	Late Chalcolithic	Early Bronze Age	Aegean	Early Bronze Age	Aegean and Black Sea	
Fb	Late Chalcolithic	Early Bronze Age	Aegean	Early Bronze Age	Aegean and Black Sea	
Fc	Late Chalcolithic	Early Bronze Age	Aegean	Early Bronze Age	Aegean	
G	Late Chalcolithic	Middle Bronze Age?	North-Central Bulgaria and South-Central Romania	Middle Bronze Age?	Black Sea	
Ha	Middle Chalcolithic	Early Bronze Age	Balkans	Late Chalcolithic-Early Bronze Age	Aegean and Black Sea	
Hb	Middle Chalcolithic	Late Chalcolithic	Central to coastal Bulgaria	-	-	
Hc	Late Chalcolithic	Middle Bronze Age?	Central Bulgaria	Late Chalcolithic	Black Sea	
Hd	Late Chalcolithic	Late Chalcolithic	Thrace	Late Chalcolithic	Black Sea	
He	Late Chalcolithic	Early Bronze Age	North-Central Bulgaria and South-Central Romania	Chalcolithic?	Aegean	
Hf	Late Chalcolithic	Early Bronze Age	Moldova	Chalcolithic?	Aegean and Black Sea	

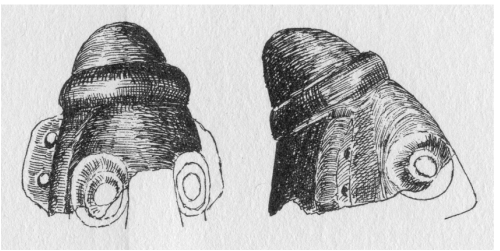
Table 2. Proposed origin and movement of figurine classes.

Alişar Höyük, Turkey
Oriental Institute
A158275

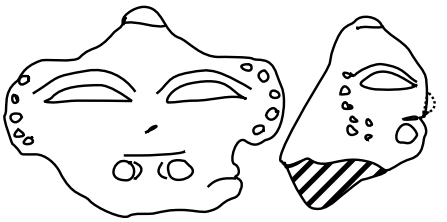


İkiztepe, Turkey
Samsun Museum
#I/75-180

Sultana, Romania
Adapted from
Andreescu 2006: pl. 56

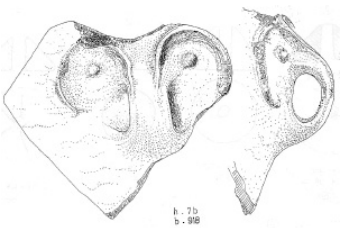


Alişar Höyük, Turkey
Von der Osten 1937 (1930-2 III): fig. 269 c2052

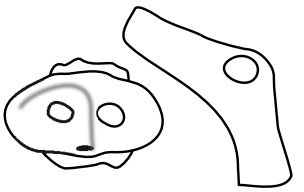


Karanovo, Bulgaria
Todorova 2001: pl. 54

Alişar Höyük, Turkey
Oriental Institute
A65695



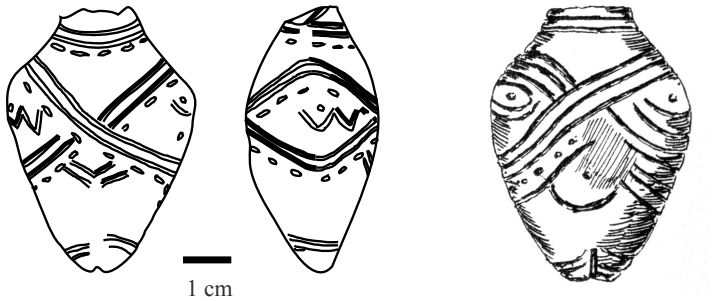
İkiztepe, Turkey
Alkım 2003: pl. 57



Vidra, Romania
Adapted from Rosetti 1938

Fig 1. Miscellaneous anthropomorphic objects from Alişar Höyük and comparanda.
Drawings by the author, unless otherwise indicated.

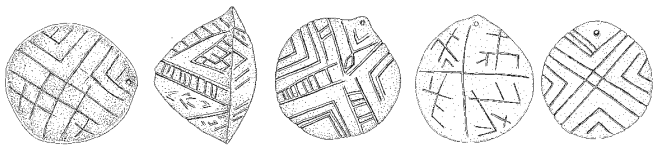
a



Alişar Höyük, Turkey
c2435

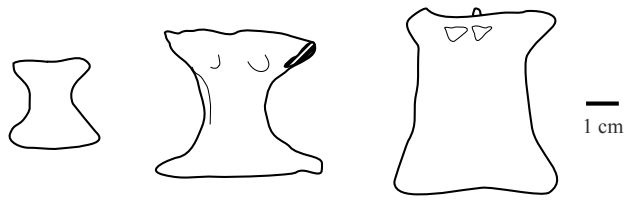
Alişar Höyük, Turkey
Von der Osten 1937 (1930-2 III): fig. 269 e947

b



İkiztepe, Turkey
Bilgi 2008: 134 fig. 2, 136

Fig. 2. Class A.



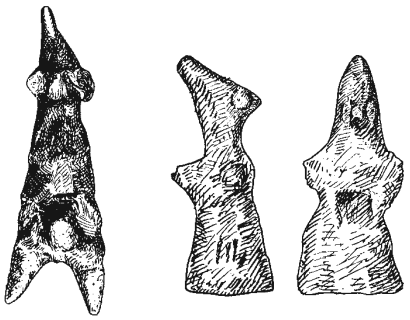
İkiztepe, Turkey
I/84-3

İkiztepe, Turkey
I/77-436

Alişar Höyük, Turkey
e100

Fig. 3. Class B.

a



Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269 c596

Alişar Höyük, Turkey
Schmidt 1931: b2055

Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269 b2058

b

Gradeshnitsa, Bulgaria
Nikolov 1974: fig. 35

Fig. 4. Class C.

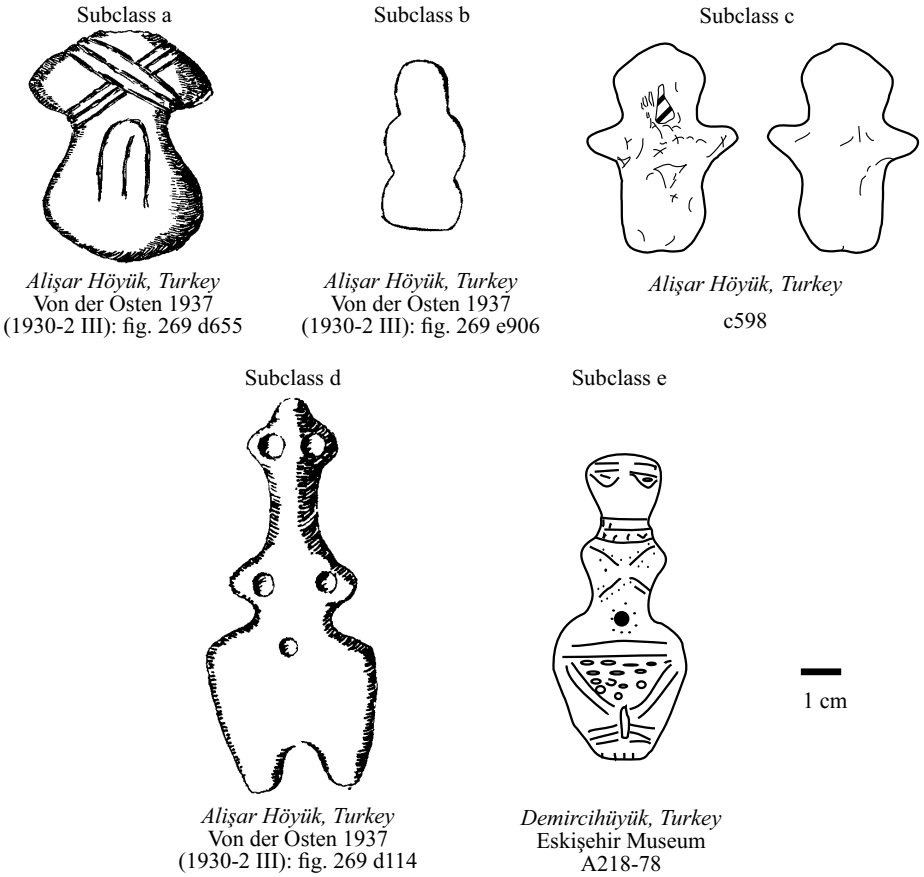


Fig. 5. Class D.

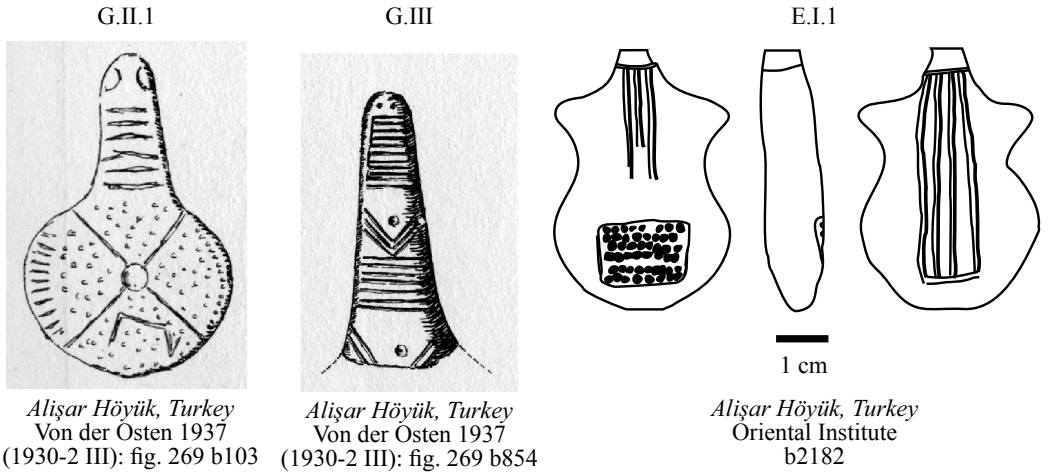


Fig. 6. Selected Makowski figurine classes.

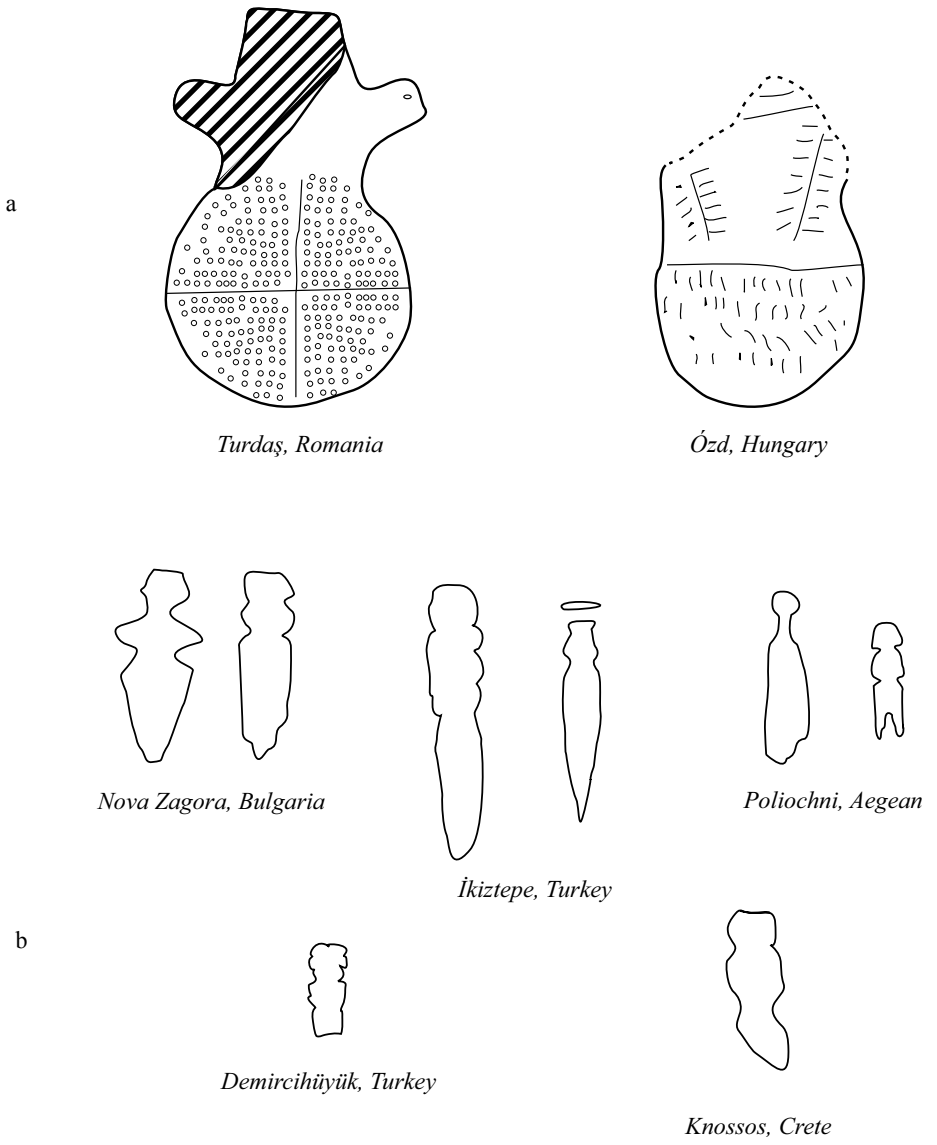
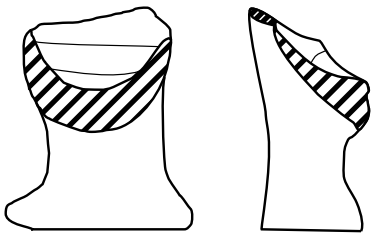
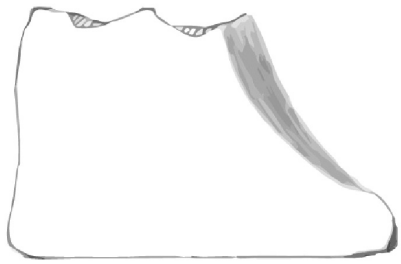


Fig 7. (a) Late Chalcolithic/Early Bronze Age figurines;
(b) flat bone figurines found in the Aegean, Balkans, and Anatolia.



Alişar Höyük, Turkey
Oriental Institute
A65690



İkiztepe, Turkey
I/76-395

Alişar Höyük, Turkey
Oriental Institute
A6183

Alişar Höyük, Turkey
Oriental Institute
A65691

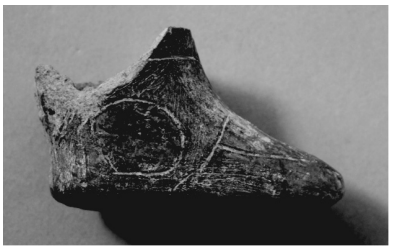
Alişar Höyük, Turkey
Von der Osten 1930
(1928-9 I): 133

Fig. 8. Class E.

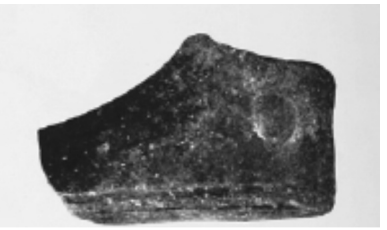
Gabarevo, Bulgaria
Mikov 1933: fig. 19

Stara Zagora Mineral Baths, Bulgaria
Nikolov 2006: fig. 193

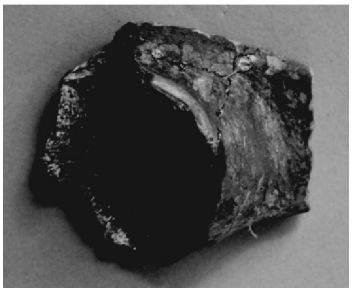
Fig. 9. Hollow anthropomorphic figurines from southeast Europe.



Smyadavo, Bulgaria
Shumen Museum # 6590



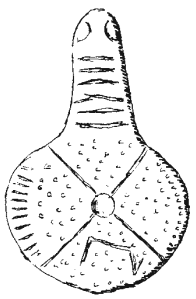
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 II): fig. 174 d1119



Smyadavo, Bulgaria
Shumen Museum # 3470

Fig 10. Hollow shoes from Alişar Höyük and comparanda from Bulgaria.

Subclass a

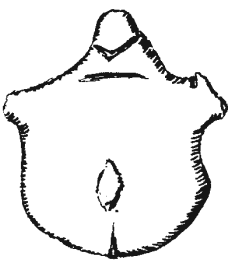


Alişar Höyük, Turkey
Von der Osten 1937 (1930-2 III): fig. 269 b103

Subclass b

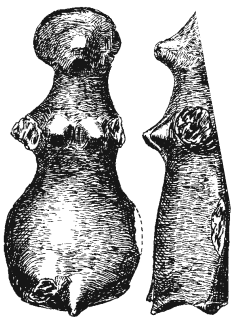
Alişar Höyük, Turkey
e510

Subclass c



Alişar Höyük, Turkey
Von der Osten 1937 (1930-2 III): fig. 269 e1318

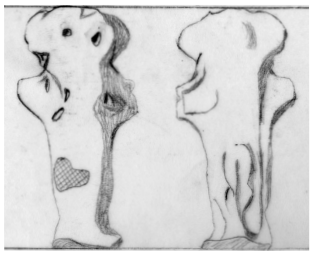
Fig. 11. Class F.



Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269 e132

Fig. 12. Class G.

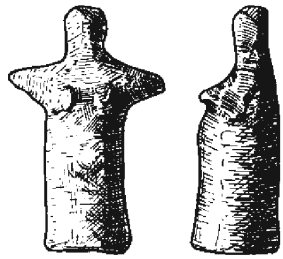
Subclass a



İkiztepe, Turkey
Samsun Museum
I/84-373

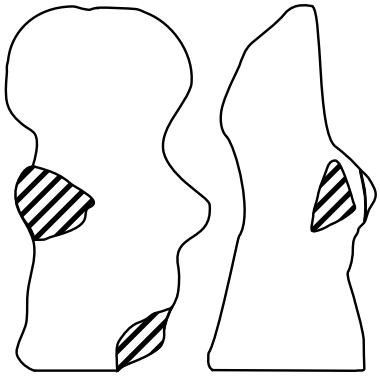
İkiztepe, Turkey
Samsun Museum
I/94-49

Subclass b



Ovcharovo, Bulgaria
Todorova 1976: pl.91.8

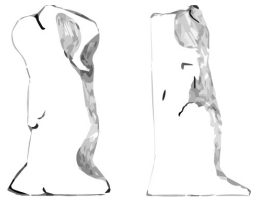
Subclass c



Alişar Höyük, Turkey
Oriental Institute
b1237

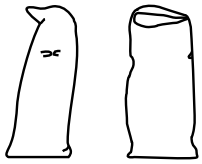
1cm

Subclass d



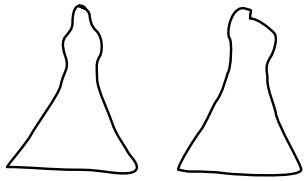
İkiztepe, Turkey
Samsun Museum
I/91-21b

Subclass d variant



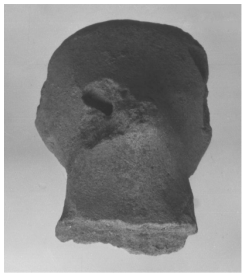
Alişar Höyük, Turkey
Oriental Institute
A65692

Subclass e

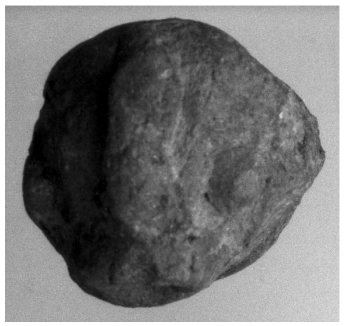


Truşeşti
Adapted from Monah 1997:
fig. 23.1

Fig. 13. Class H.

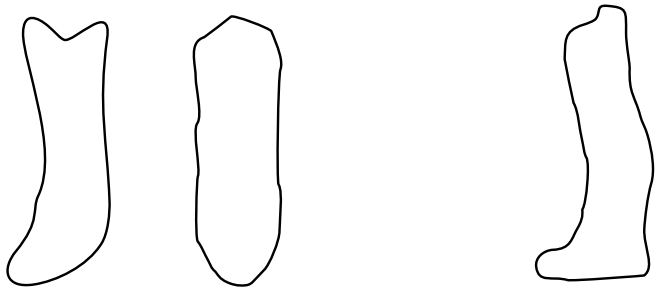


Alişar Höyük, Turkey
Oriental Institute, Archival Photo
2367



Alişar Höyük, Turkey
Oriental Institute, Archival Photo
b2633

Alişar Höyük, Turkey
Oriental Institute, Archival Photo
b1610



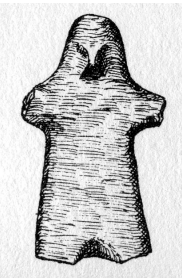
Alişar Höyük, Turkey
Oriental Institute
A6280

1 cm

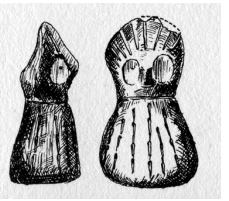
Alişar Höyük, Turkey
Oriental Institute
A10841

Fig. 14. Unpublished "figurines".

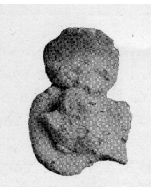
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 II): fig. 232
d2696



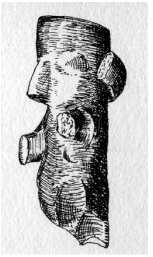
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269
e1934



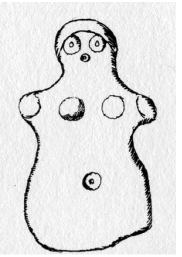
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269
e1793



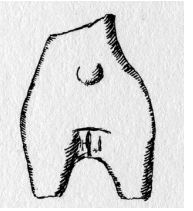
Alişar Höyük, Turkey
Von der Osten 1937
(1930-32 II): fig. 231
e1443



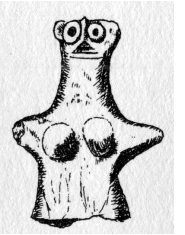
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269
c677



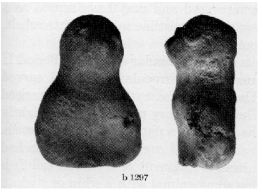
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269
d2345



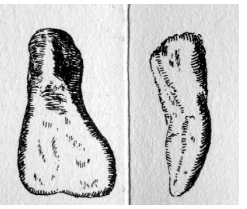
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269
e864



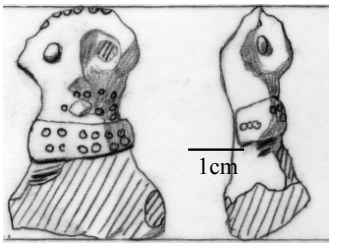
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269
e898



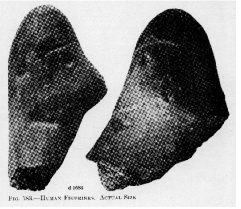
Alişar Höyük, Turkey
Schmidt 1932
(1928-29 I): fig. 161;
1929



Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269
e1398

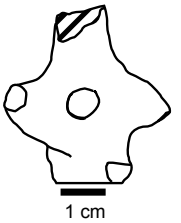


Alişar Höyük, Turkey
Oriental Institute
1452



Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 I): fig. 183 d1683

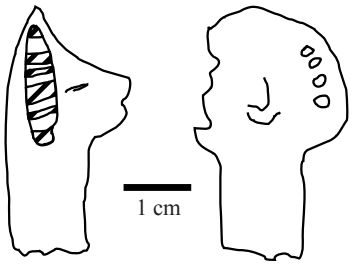
Alişar Höyük, Turkey
Von der Osten 1937
(1930-2 III): fig. 269 2941



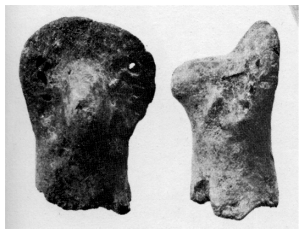
Alişar Höyük, Turkey
Oriental Instute 2383

Alişar Höyük, Turkey
Schmidt 1932 (1928-29 I):
fig. 161 b1718

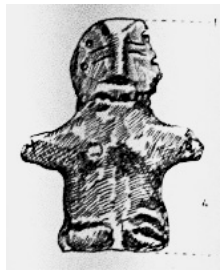
Fig 15. Previously published unclassified figurines from Alişar Höyük.



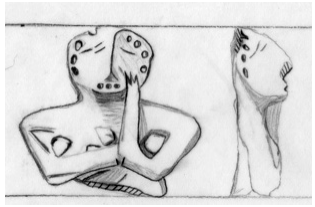
Alişar Höyük, Turkey
Oriental Institute c506



Alişar Höyük, Turkey
Oriental Institute e1940

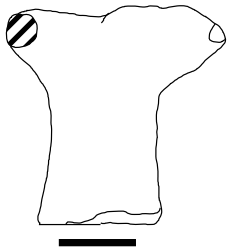


Ruse, Bulgaria
Georgiev & Angelov 1957: fig. 64.4

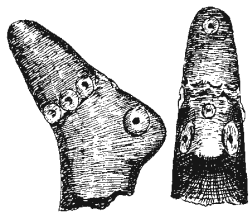


Bulgaria
Plovdiv Museum 2913e

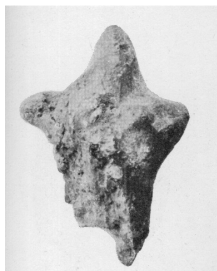
Fig 16. Alişar Höyük figurine heads with Bulgarian comparanda.



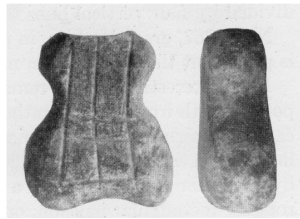
Alişar Höyük, Turkey
Oriental Institute 1488



Alişar Höyük, Turkey
Von der Osten 1937 (1930-2 III): fig. 269 b2058

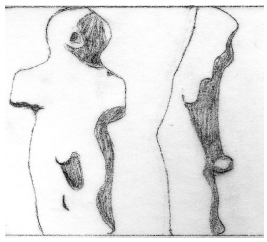


Alişar Höyük, Turkey
Von der Osten 1937 (1930-32 II): fig. 231 e454

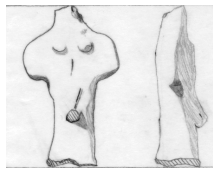


Alişar Höyük, Turkey
Schmidt 1932 (1928-29 I): fig. 62.b262

Fig 17. Previously published unclassified figurines from Alişar Höyük.



Vidra, Romania
Bucharest Museum 15265



İkiztepe, Turkey
Samsun Museum I/03-49

Fig 18. “Male” figurines.

Anatolica XL, 2014

GÖKÇEADA UĞURLU ARCHAEOLOGICAL PROJECT: A Preliminary Report from the 2011-2013 Field Seasons

*Burçin Erdoğu**

Abstract

This is the second article published in Anatolica on excavations conducted at Uğurlu, located on the island of Gökçeada (Imbros). It constitutes a preliminary report of the field seasons carried out in 2011-2013. Because of its long occupational history Uğurlu is one of the most important prehistoric sites in the Northeast Aegean region. Stratigraphic excavations have clarified the spatial extent of the settlement from the earliest Neolithic occupation onwards (6500 cal. BC), and brought to light evidence of the transition from the Neolithic to the Chalcolithic period (5500 cal. BC) as well as transformations of the site in the late 5th and the early 4th millennium BC. The settlement was probably founded by newcomers from the Northwest Anatolian mainland, but afterwards islanders may have formed their own culture and identity.

Introduction

Maritime prehistory is a growing field of research with discussions concerning early human dispersals, insularity and colonization as well as trade and exchange. In the Aegean most of this work has focused on early seafaring and colonization and/or utilization of islands (e.g. Cherry 1990; Broodbank 2006). The Aegean Islands are critically located at the meeting point of Anatolia and the mainland of Greece. They were an important and useful landfall location for seafarers and could therefore have been part of a route for the spread of a Neolithic way of life to Southeast Europe. According to many researchers the Aegean Islands played an important role in the spreading of a Neolithic way of life to Southeast Europe. For example, Chapman (1994) argues that forager-farmer exchange networks in the Aegean probably kick-started the rise of a Neolithic way of life in Southeast Europe. Based on the comparison of the available C14 dates and the genetics of living European populations, Ammerman and Cavalli-Sforza (1984) proposed a model of "demic diffusion" or "wave of advance" which argued the spread of a Neolithic way of life to Europe by a more or less continuous migration of people from the Near East. The Jump Dispersal model for migration from Anatolia to the mainland of Greece, suggested by Van Andel and Runnels (1995), involved the crossing of the Aegean by movement from island to island. Recently, Perlès et al. (2013) mentioned island-hopping routes across the Aegean Sea for the spreading of a Neolithic way of life to Southeast Europe. The site of Uğurlu at the Island of Gökçeada is the earliest Neolithic settlement thus far known in the Eastern Aegean Islands, and it is likely to be critical for understanding the spread of a Neolithic way of life through to the west.

* Trakya University, Department of Archaeology, Prehistory Section, 22030 Edirne.

The island of Gökçeada (Imbroz) is about 17 km from the Gelibolu Peninsula and covers an area of 289.5 sq km. Uğurlu is located on the western part of the island (Fig. 1). The site is a low mound covering an area of approximately 250 x 200 m on a gentle slope at the eastern foot of Mount Isa (Doğanlı). The main Uğurlu-Dereköy road cuts through the site (Fig. 2). The site has also been damaged by a long trench dug for the opening of an irrigation system. The Pilon stream lies at the eastern part of the site, and there is also a nearby spring. The island is mountainous. The solid geology is composed mainly volcanic rocks. The western part of the island is generally less steep and has the best agricultural land. During the four years of excavation five main cultural phases, designated as I-V (counting from top to bottom), and at least 9 layers of occupation so far have been revealed (Erdoğu 2011). The earliest two phases (IV & V) date to the Neolithic period. Phase III is marked by the Neolithic-Chalcolithic transition at the site. The succeeding Phase II has revealed at least two occupational layers of Western Anatolian Kumtepe Ia-Beşik Sivritepe Culture. Scattered sherds from Early Bronze Age and Medieval times have been found in the surface, Phase I.

THE NEOLITHIC OCCUPATION

The earliest occupation is located in the eastern part of the settlement, close to the Pilon stream. So far two possible occupational layers of Phase V have been recorded. The early layer of Phase V is represented in sounding trenches. No architectural structures except scattered stones in clusters were found in this early layer. Extremely dense concentrations of animal bones were studied by Levent Atıcı who has identified domestic sheep, goat, pig and cattle. The presence of wild boar, red deer, hare and fox indicate the practising of hunting. A single AMS radiocarbon date from the early layer of Phase V (Wk-29173: 7618±36 BP) calibrate respectively to 6566-6518 cal. BC (2α).

A single-room, earthened-floor building, about 5 x 4 m, has been excavated in the late layer of Phase V (Fig. 3). The walls are probably made of muds on stone foundations. The eastern and western walls are ca. 1.00 m thick, while the northern and southern walls are about 0.70 m in width. The northern wall is standing to a height of about 1.00 m, and a fireplace sets inside the wall. The fireplace seems to have been filled with earth and stones after its abandonment, and a stone axe consciously left on it. The southern wall of the building has been partly damaged by a long trench dug for the opening of an irrigation system. A massive exterior buttress is attached to the southern wall of the building. The small room size (9.2 m²), thick walls and massive exterior buttresses indicate that the building had an upper story. The northern wall stretches about 3,5 m towards the east with a parallel wall ca. 1 m wide, which creates a courtyard. There is a large oven approximately 1 m in diameter that lies in an open area in the southern part of the building.

The architecture of this early structure is characterized as a small-scale household with limited space for social interaction and no dedicated storage installations. A sherd with human motif in relief (Fig. 4) and a head from animal bone from a Acrolithic figurine were

found in the northwestern part of the building. The nose of the figurine head was shown in relief while the eyes were shown in red paint (Fig. 5). Some broken bone tools and a small stone axe made of serpentine were found *in situ*. A small broken malachite bead was also found in the building. There are a couple of malachite veins running between the villages of Dereköy and Tepeköy, close to site.

During Phase IV the settlement enlarged, and the Neolithic settlement covered an area of 6 hectares. The Phase IV deposit is about two and half meters thick and has revealed at least four occupational layers. No complete building plans have been exposed. In the western part of the settlement, sounding trench P5 yielded Phase IV occupation. So far 3 layers of Phase IV have been excavated, and they have been damaged by the upper Phase III. A thick yellow-colored compact floor with a circular hearth and a plastered pit were found in the first layer of Phase IV. The hearth measures 0.90 x 0.90 m. The floor yielded an extremely dense concentration of animal bones and bone tools. A small pit lies close to the hearth and measures 0.70 x 0.70 m. The inner walls and the pit bottoms were plastered by yellow-coloured clay. 28 worked bones, 1 stone bowl and 1 broken stone adze were found inside the pit. 26 worked bones consist of flattened awls with rounded heads. They should be considered to be symbolised human beings and interpreted as bone idols (Fig. 6).

A partly excavated building with damaged stone walls was found in the second layer of Phase IV. A large storage vessel was found in one corner of the building (Fig. 7). A partition wall within the building was constructed of muds and adobes. Multiple layers of a plastered floor, a large oven and two plastered oval features were found in the third layer of Phase IV. Two AMS radiocarbon dates (Wk-29175: 6982±42 & Wk-29174: 6996±36) range from ca. 5980-5750 cal. BC (2 α).

In the eastern part of the settlement, a building with a long exterior buttress has been partly excavated. The building has two architectural phases. During the latest phase, the building was narrowed. A single AMS radiocarbon date (Beta–309674: 6680 ± 40 BP) calibrates to ca. 5600 cal BC. A sounding trench also yielded a courtyard with at least 5 hearths in this part of the settlement.

One of the excavation objectives was to investigate the role of plants in the Neolithic economy of the settlement. A large number of soil samples was processed by flotation. Examination of the carbonized botanical remains by Soultana Valamoti indicate domestic cereals including einkorn wheat (*Triticum monococcum*), six-rowed barley (*Hordeum vulgare*), naked barley (*Hordeum vulgare var. nudum*) and *pea* (*Pisum sativum L.*). Large quantities of shells and fish bones suggest the potential importance of marine sources in the Neolithic diet of Uğurlu. Among the shells, *Patella* and *Mytiliades* are numerous.

Polished stone axes/adzes and bone tools are abundant. Bone tools consist mainly of awls, chisels, spatulas and needles. Bone hooks and an antler hammer are noteworthy (Fig. 8). Pan-shaped stone vessels are also significant (Fig. 9). Stone and shell beads and pendants are also the main finds (Fig. 10). Neolithic figurines are rare but significant. Noteworthy among them are acrolithic figurines, a marble figurine head and a pregnant-like anthropomorphic figurine.

Pottery is the most common artifact group in Neolithic Uğurlu. The vast majority of Phase V pottery is red slipped and burnished. Black burnished sherds were found in small quantities. All pottery is handmade and thin walled. Deep bowls with "S" profile, hole-mouth vessels and straight-sided shallow dishes are common shapes (Fig. 11:1-9). Bases are either flat or have a low pedestal. Vertically placed tube-like and knob-like perforated tubular lugs, as well as small crescent shaped lugs, are characteristic (Fig. 11:11-12). A human-faced sherd is unique. General parallels to Uğurlu pottery were found in Western Anatolian sites. However, several forms of pottery from this oldest known phase in Uğurlu show unmistakable parallels with Hoca Çeşme IV-III in Turkish Thrace as well as Aktopraklık and the basal layers of Menteşe in the Marmara region (Bertram&Karul 2005, Fig.1-3 ; Karul&Avcı 2011, Fig.11-12 ; Roodenberg et al. 2003, Fig.13:1-4; Fig.16:1-6).

There is apparent progress with regard to pottery production in Phase IV. Neolithic pottery from Phase IV is of an extremely high technological standard, demonstrating a degree of ingenuity and creativity. Pottery is handmade, lustrously burnished and thin-walled. It has been sorted out into seven ware groups. Red-slipped black ware is dominant, 60% of the total assemblage. A jet-black surface color is common. Different tones of red and pink slip are applied on the exterior surfaces and below the rim of the interior surfaces. The thickness of the slip application varies greatly, and generally shows a mottled appearance on the surface. Other wares include the red slipped buff ware (12%), the black/gray burnished ware (9%) and the brown burnished ware (7%).Red and black burnished coarse wares also occur.

Looking at the repertoire of shapes, deep bowls with "S"-shaped profiles and bead rims are common (Fig. 12:1-5). The profiles are sometimes slightly carinated. Deep bowls with flaring sides, bowls with internally thickened rims, hole-mouth jars, and tall-necked jars, occasionally with small handles, are also common (Fig. 12:6-8). Bases are flat or ring-shaped. Four-footed vessels also occur. Vertically placed long, tube-like, perforated lugs are characteristic, and they were manufactured differently. Thick clay was added inside the walls and perforated, and then tube-like relief was made outside the vessels. Pedestals with cut outs, boxes and lids are also characteristic. Decoration is rare but the most characteristic decoration technique is impresso (Fig. 13:9-10). Another decoration is incised lines combined with dot impressions (Fig.13:8). Impressed cross or "T" motifs occur only on pedestals. The only five small pieces of painted pottery found so far on the site were found in Phase IV. A white-on-red painted sherd is identical in ware, techniques and design to the pottery of Karanovo I (Fig. 13:5). Red-on-black sherds look like local productions (Fig.13:6-7). None of the Uğurlu Phase IV pottery is exactly identical to the Anatolian repertoire of shapes, but it bears general similarities. The pottery types are similar to those of contemporary cultures in the Aegean.

Thin-sections of 30 sherds (10 Phase V & 20 Phase IV) and 3 clay samples around Uğurlu were analysed by Chris Doherty and Eleni Palamara using an optical microscope to provide further information on the porosity of the fabric and the non-plastic inclusions. Later, the samples were analyzed with the use of a Scanning Electron Microscope. The

chemical composition of the fabric was also measured for each sample. Only one type of clay could be distinquished and it is non-calcareous of andesitic/dacitic composition. The minerals consist of quartz, alkali and plagioclase feldspars, amphiboles and titaniferous minerals, especially magnetite and titaniferous magnetite. This composition is compatible with the local geology of Gökçeada. The analysis has not shown important differences in clay source and the method of pottery production between Phase V and IV. The majority of Phase IV samples tend to be slightly coarser and have a larger amount of inclusions than Phase V samples. Some slight changes occur in the distribution of some minerals, such as amphiboles and magnetites. The changes in minerals between the two phases can be explained by the observed difference in the coarseness of the clay. Organic temper is almost absent. Only a very small number of organic inclusions were identified and probably they were not deliberate additions. A very small number of bone fragments were identified in a few samples, and only one sample has vegetable inclusion. A comparison between the results of the thin section analysis and the chemical composition of the sherds and clay samples gives the impression that the Neolithic pottery of Uğurlu has been made of local clays (Erdoğu 2013).

One distinctive aspect of Neolithic Uğurlu was long-distance trade and exchange, best reflected in the distribution of obsidian and Balkan flint. These were raw materials used from the beginning for knapped tools, but local flint was used much more frequently, comprising 99% of lithic assemblage of the site. Denis Guilbeau, who works on chipped stones of Uğurlu, pointed out that flakes are more common than blades. A total of ca. 20% of the chipped stones are blades in Phase V. Blades are also rare in Phase IV, represents ca. 9% of the total assemblages. Most of blades were made by the pressure technique in Phase V. Tools are very rare in both phases. The most distinctive tool in Phase IV is a flint macro blade, the so-called "Karanovo macro blade" (Gurova 2008). About 25 macro blades were found in this phase and a core and some flakes from the same raw material, the so-called "Balkan Flint", were also recovered (Fig. 14). The origin of this type of flint is in the Razgrad region of the Eastern Balkan Mountains. Most of the blades have deep retouched sides and some blades have polished surfaces. Other tools are sickle blades, scrappers, burins and pièces esquillées. Some geometric microlithic were also found.

Almost all obsidian pieces are blades, which were made by the pressure technique. The obsidian pieces were analyzed by Marina Milic using portable X-Ray Fluorescence. The results demonstrate that obsidian comes from 3 sources: the island of Melos, East Göllü Dağ and Nenezi Dağ of Central Anatolia. The Melos samples are much more frequent. An obsidian bullet core from Nenezi source is unique (Fig. 15). Similar cores were found only in the site of Aktopraklık North-west Anatolia (personal communication with Marina Milic).

Vessels and foot-shaped objects of marble are the main finds in Phase IV. A marble mace head is unique. No marble sources are found on the island. Western Anatolia and Aegean islands, such as Lesvos and Thasos, have sources of fine white marble. Unfortunately, quarry sites per se are generally unknown. A prehistoric marble factory, called Kulaksızlar, was found in Western Anatolia but it was dated to the fifth millennium BC (Takaoğlu 2005).

THE CHALCOLITHIC OCCUPATION

Phase III is marked by the Neolithic-Chalcolithic transition at the site. The settlement was divided into two sections, a residental area in the east and a storage area and workshops in the west. A large, multi-roomed structure (Building 3), about 10 x 10 m in size, has been excavated in the eastern part of the settlement (Fig. 16). The building was quite sophisticated, being built with drystone walls and yellow-coloured plaster clay floors. The plan of building consists of two cell-like rooms (R3&4) in the west and a relatively large room (R1) in the east. Another cell-like room (R2) in the east was almost completely destroyed by surface activities. The largest room measures ca. 4 x 4 m and corners of the room were paved with stone slabs. The northwestern corner of the room yielded several grinding slabs, indicating these were areas in which foodstuffs were ground and food preparation took place. Most of animal bones and shells were also concentrated there. A narrow doorway lies in this part of the room, from which one stepped over a raised threshold to enter a courtyard. In the southwest corner of the room two large bone tools - an awl and a chisel, were found. They were presumably used for leatherworking or other purposes. A post hole with a large stone with a hole in the middle lies near the northeast corner of the room. A large, well made *Spondylus* bracelet was also found in this room. The cell-like small room (R3) in the west measures ca. 1,5 x 3 m. Storage vessels and two adzes from *serpentinite* were found in this room. A single AMS radiocarbon date from Building 3 of Phase III (Beta-345836; 6410±30 BP) calibrate respectively to 5470-5320 cal. BC (2α).

A geophysical survey was conducted as part of the Uğurlu Archaeological Project by Mahmut Drahor, with the aim of mapping the buried remains of the site. The magnetometry surveys on the eastern part of the settlements have identified numerous Phase III structures including a large 20 x 5 m rectangular structure and probably multi-roomed buildings (Fig. 17).

In the western part of the settlement 12 pits were excavated. The inner walls and the pit bottoms were plastered by yellow-coloured clay, between 3 and 5 cm thick. They were circular in shape and some as deep as 1 m with diameters of 1 m. They were deliberately filled with large stones before abandonment. A large quantity of animal bones and pottery sherds was found inside the pits, as is usual for waste. Bracelets or rings from *Spondylus gaederopys,* pendants from *Cerastoderma* and bone tools were also recovered from the pits. Inside one pit a partial skeleton was found. It was a secondary burial of a middle-aged man. Red ochre was applied to the burial. Yellow-coloured plaster clay from the pit was examined for its mineral content using X-ray diffraction (XRD) and for its chemical composition using X-ray fluorescence (XRF). XRD investigation showed that the plaster sample is Bentonite, contained montmorillonite, illite, quartz and calcite. Feldispat, clinochlore and christobalite were also present. Bentonite clay was used as plaster in historic times in this region. Pits were likely used for storage purposes. Wet bentonite prevents further expansion and therefore stops water absorption and/or penetration.

Pits were dug through a layer in which large quantities of *Spondylus gaederopys* pieces and bracelets or rings from *Spondylus gaederopys* were found. Bone tools are also abundant. Besides awls, there are smoothers and chisels of deer antler. Objects of

Spondylus were highly prized and probably endowed with symbolic significance. The distribution of Aegean *Spondylus* in the Balkans and Central Europe during Neolithic and Chalcolithic periods is considered one of the most telling and important indications of large-scale prehistoric trade. *Spondylus* workshops have been identified in Neolithic Greece at the sites of Dimini, Sitagroi and Stravroupolis (Souvatzi 2008). Uğurlu items indicate that a *Spondylus* workshop may also exist on the island. The anthropomorphic figurines from Phase III are large in number and typologically varied. Acrolithic figurines are common. These figurines possess flattened bodies with folded arms and heads from a different material that would have been inserted in a hole on the neck. A triangular-shaped *Spondylus* head with slanted excised eyes indicates that they may have been inserted in these figurines. Other common anthropomorphic figurines have wide hips and thighs, thin bodies and folded arms**.** Schematic anthropomorphic figurines with exaggerated buttocks are also common. These figurines have incised decoration, and they have always been broken along the vertical axis. Venus-like figurines are also noteworthy. They hold their shoulder with one hand while shielding their genitals with the other. Zoomorphic figurines are rare (Fig. 18).

Phase III pottery is homogenous and completely different than previous phases. Sherds are coated with a black, grayish black slip on reddish brown surfaces, and generally show a mottled appearance on the surface. Fresh breaks in sherds show incomplete oxidation firing. Four-footed bowls with ear-like or strap handles, large lids, boxes, button-like or horned handles are characteristic (Figs. 19, 20).

Decoration is common and generally applied on four-footed bowls and boxes. Various decorative techniques have been employed, such as impression, incision and channeling. Impressed decoration comes in several variations, such as dots, triangles and rectangles. Chips of clay were cut and arranged in different patterns, such as chessboard and triangular. Spiral and meander designs are common. Incised decoration has white paste fill. No exact similarities exist between Uğurlu Phase III pottery and Anatolian pottery traditions. Though Phase III pottery bears some resemblance to the pottery of the Balkan Karanovo III and Early Vinca cultures, it is not identical and should be considered as a local development.

Preliminary analysis has not shown important differences in the lithic material between Phase III and Phases IV-V. However, Phase III tools are more numerous than previous occupations. Blades are very rare and *pièces esquillées*, scrapers and borers are more numerous than in Phases IV-V. Obsidian is now very rare and all from Melos. Only a few tools made of "Balkan flint" were found.

Excavations in Phase II have revealed evidence of the Western Anatolian Chalcolithic Kumtepe Ia-Beşik Sivritepe Culture. The excavation revealed two buildings in the western part of the settlement. A trapezoidal building (Building 1) with stone walls measure ca. 5 x 5 m (Fig. 21). It had suffered from a partial collapse, and an additional wall and a stone buttress were constructed on the northern part of the building to make it useable again. A stone buttress measures 1.50 x 0.87 m and stands to a height of 0.40 m. A post hole with a large stone with a hole in the middle lies near the stone buttress. The building has a compact earthen floor, and no features such as oven or hearth have been found in the building.

The southwestern part of the building was designated for storage. Large storage vessels and a total of 130 *Muricidae* shells were found there. 7 stone axes and adzes, 11 worked bones, mostly awls, 4 *Spondylus* bracelets, worked shells and a clay figurine head were also found in the building. A half circular courtyard wall was discovered in the west end of the building. It is made of large stones 0.50-0.52 m in width. A unique human-faced vessel was found in the courtyard. A single AMS radiocarbon date from the Building 1 of Phase II (Beta-362320; 5500±30 BP) calibrate respectively to 4449-4267 cal. BC (2α).

The other building (Building 4) is rectangular in plan, measures ca. 7 x 6 m, and is constructed with stone walls (Fig. 22). The building was poorly preserved and damaged by surface activities. A centrally placed entrance lies on the southern long wall. There is a 1.40 x 1.00 m "patio" in front of the entrance. A large bull horn was found in the entrance (Fig. 22). It appears to have hung on an interior wall. The floor of the building was plastered with burnt lime mixed with soil and sediment. Traces of red paint remain on parts of the floor surface. Traces of red paint were also found near the entrance. Two broken clay figurines were discovered near the "patio". One figurine has exaggerated buttock, flat body and folded arms (Fig. 23). It is reminiscent of Balkan figurines. Another figurine looks like Phase III figurines with thin bodies and folded arms, but it has a long neck. Traces of building decoration with animal horns and paintings on walls and floors appear as early as PPNA in the Near East, and they often related to communal or public buildings. I also prefer to interprete this building at Uğurlu Phase II as a communal or public building.

The pottery of Phase II is characterized by burnished black, gray, red and buff coloured wares. Coarse wares seem larger than fine wares. The most noticeable feature of the pottery is decoration. Pattern burnished, channeling, incised decorations are characteristic (Fig. 24). Horned and wish-bone handles are also characteristic elements of this pottery. The chipped stones are too rare to make a precise study, but it seems there is no significant change from the previous phase. Macro blades from Balkan Flint still exist in this phase. When compared to the Neolithic samples, they are long and thin.

DISCUSSIONS AND CONCLUDING REMARKS

Excavations at Uğurlu on the island of Gökçeada show that longer-term or permanent settlement on the Aegean islands was achieved from the early Neolithic onwards by people with an agricultural economic base, including cultivated plants and domesticated animals. The earliest Neolithic settlement of Uğurlu was probably founded by newcomers from Northwest Anatolia. The first settlers were agriculturalists and they introduced domestic sheep, goats, cattle and pigs to the island. Sea level and the shoreline in the Aegean were different during prehistoric times (Lambeck 1996). During the early Neolithic period around 6500 BC sea level reached approximately -36 isobaths. Gökçeada Island was probably much closer to the mainland when the first Neolithic settlers sailed to the island.

It is generally believed that the transition from a hunter-gatherer to a farming way of life is what defines the start of the Neolithic in Europe, and farming of crops and

domestication of animals were adopted from the Near East through Anatolia. Recent investigations show wild barley and wild einkorn in the Mesolithic deposits of Theopetra Cave (Kyparissi-Apostolika 1999) and stands of wild einkorn grow abundantly today in the hilly areas of northern Greece. Wild oats, barley, and lentils also exist in Upper Paleolithic and Mesolithic levels at Franchthi Cave (Hansen 1991). On the other hand, genetic studies have subsequently ruled out European ancestry for domestic wheat, barley, and pulses, confirming the Near East as the source of these crops (Zeder 2008). In addition, genetic studies show a Near Eastern origin for domestic cattle and no indication of domestication of European aurochs, but recent genetic studies also show that early pigs in western Anatolia differed from those domesticated in the Near East and from western Anatolian pigs that were introduced to SE Europe (Baird at al. 2007; Ottoni et al. 2012).

The role of symbolic domestication and a social perspective on the transition to a new way of life show that the Neolithic is marked not only by the onset of farming but also by the emergence of complex symbolic and socio-political systems (Cauvin 1989; Hodder 1990; Hayden 1993). The most important question about European Neolithic now is, are any practices, such as mortuary, ritual or symbolic systems transferred? At first sight all of these practices in Southeast Europe are different than those of the Near East. As Lichter (2011) pointed out, the term "package" is misleading and does not reflect the heterogeneity and variety of the Neolithic.

The Neolithic Phase IV at Uğurlu has signs of continuity, but the cultures of island and mainland clearly diverge. Differences in material culture may be a deliberate expression of local identity within a wider cultural setting. The settlement enlarged towards the west. Orientation and sizes of buildings were changed. Phase IV at Uğurlu indicates some changes in pottery tradition. It seems likely that the pottery from this phase was the product of local development and it is different from other Western Anatolian sites. On the other hand, pottery shapes are fairly homogeous throughout the Aegean. Phase IV is characterized by the most striking evidence of early craft specialization and long-distance communications. The distribution of Melian and Central Anatolian obsidian as well as Balkan honey-flint and marble suggests the intensification of long distance exchange mechanisms and travels must have involved seafaring for some parts of the journeys.

Phase III at Uğurlu is a transitional phase with an increasing predominance of dark burnished wares with different decorations. Major change also occurred in the settlement system and architectural tradition. There is no comparable architectural tradition on other regions. The building plan of Phase III is advanced and extremely unusual for this period. The pottery of Phase III, though bearing some resemblance to the pottery of the Balkan Karanovo III and Early Vinca cultures, is not identical to them and so should be considered as a local development. A single radiocarbon AMS date from Phase III also matches Karanovo III dates as well as Aşağı Pınar 5 (Görsdorf 2005) and Ilıpınar VB (Thissen 2008). An abundance of untreated *Spondylus gaederopys* and *Spondylus* items indicate that a *Spondylus* workshop may exist in this phase.

Phase II contained Kumtepe IA-Beşik Sivritepe material of Western Anatolia. This is a Chalcolithic culture which spread in Western Anatolia and Eastern Aegean Islands. Very little was known about the architecture of this culture in Western Anatolia; it is best known from its pottery. Our knowledge today indicates that the Kumtepe IA/Beşik Sivritepe Culture should be divided into at least two phases, and only the late phase of this culture exists in Uğurlu. Although only a very small section of the site was excavated, findings indicate that Uğurlu is one of the most significant settlements during this period. The communal building of Phase II suggest that Near Eastern traditional rituals of building decoration with animal horns and paintings on walls and floors continue to exist in the west.

Uğurlu is one of the most important prehistoric site in the north eastern Aegean. Since only part of the site has been excavated, it forms an exceptional archaeological reserve for future study.

ACKNOWLEDGEMENTS

I wish to thank Terry Christenson for his kind corrections to the language in this paper, as well as his valuable comments. The project is supported by The Turkish Ministry of Culture and Tourism and University of Thrace. In 2011-13 field seasons, the team consisted of Burçin Erdoğu (University of Thrace, Edirne), Onur Özbek (18 Mart University, Çanakkale), Denis Guilbeau (University of Paris X), Levent Atıcı (University of Neveda), Soultana Valamoti (University of Thessaloniki), Adnan Baysal (University of Bülent Ecevit, Zonguldak), Fuat Yılmaz (University of Thrace, Edirne), Nejat Yucel (PhD candidate, Istanbul University), Kerem Demir (University of Pamukkale, Denizli), Erkan Gürçal, Burcu Birinci, Haralambos Nikolayidis, Ramazan Gündüz, İlkay Merve Duru (MA candidates), Melek Kuş (MA), Abdurrahman Sönmez (MA), Gülay Yılankaya-Erdoğu (MA), İncila Öztürkcan (Architect), Cüneyt Akgün, Zeki Şahbaz, Tolga Günaydın, Yasin Cemre Derici, Funda Değer, İbrahim Çolak (BA students).

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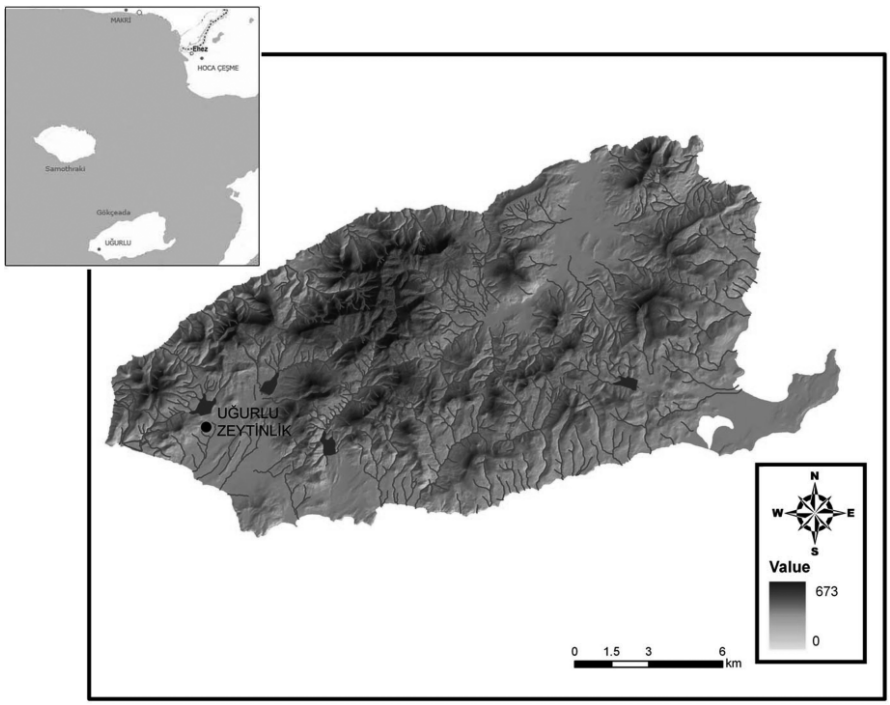

Fig. 1. Map of the island of Gökçeada showing the location of Uğurlu.

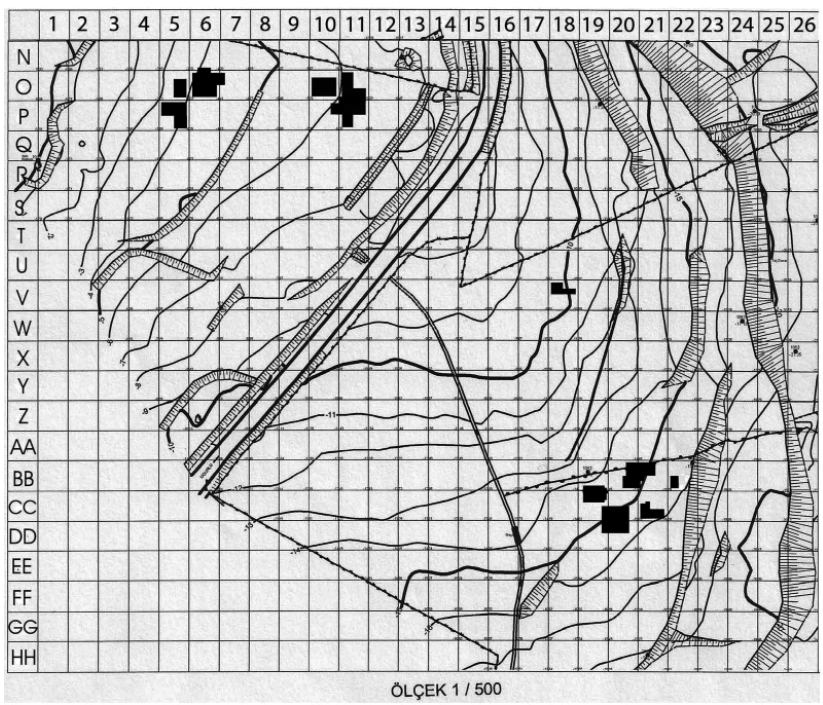

Fig. 2. Topographic plan of the site and the excavation trenches.

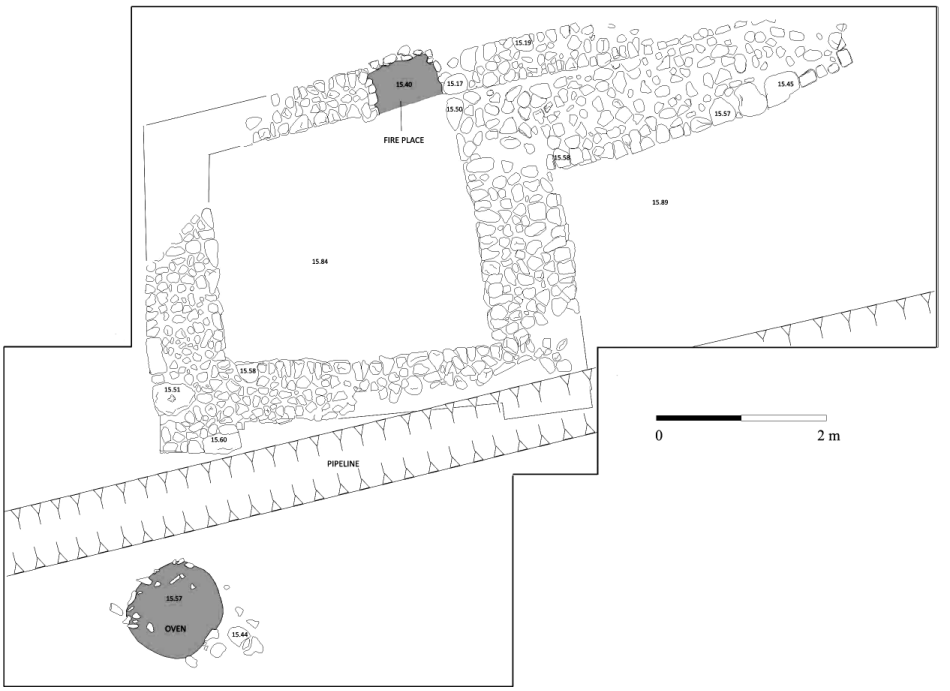

Fig. 3. Plan of the Neolithic Building 2.

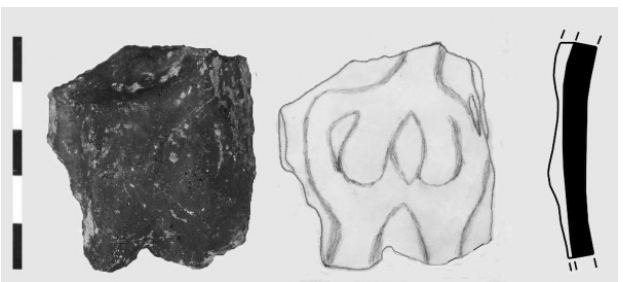

Fig. 4. A relief decorated sherd from Phase V.

Fig. 5. A bone figurine head from Phase V.

Fig. 6. Bone awls recovered in a pit.

Fig. 7. Partly excavated Neolithic building features from Phase IV.

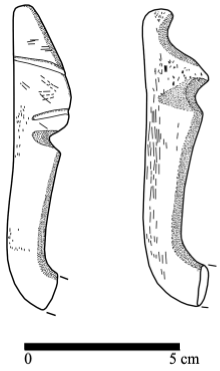

Fig. 8. Bone hooks from Phase IV.

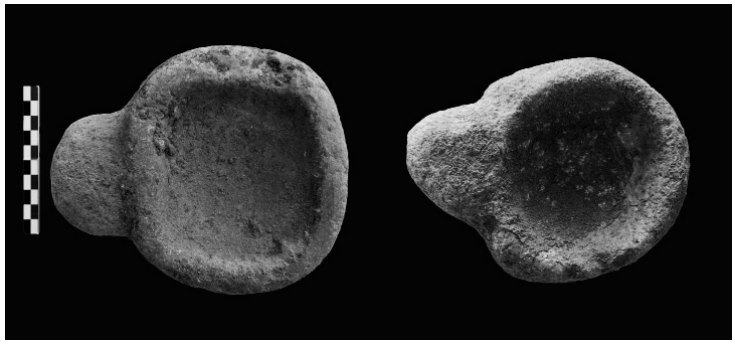

Fig. 9. Pan-shaped vessels from Phase IV.

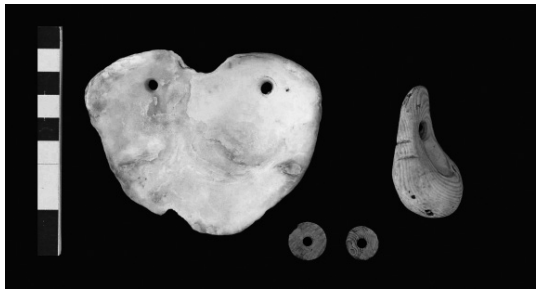

Fig. 10. Shell pendants and beads from Phase IV.

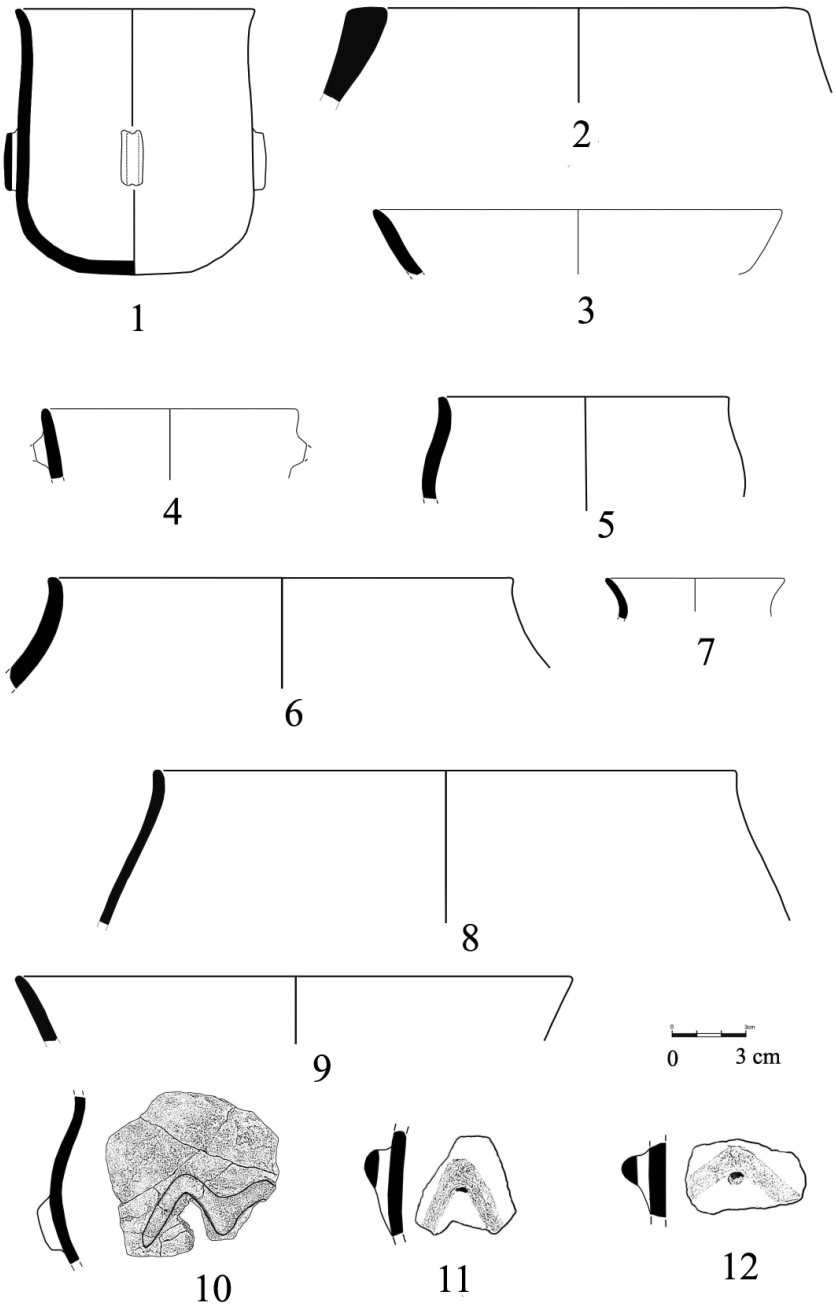

Fig. 11. Selected pottery forms of Phase V.

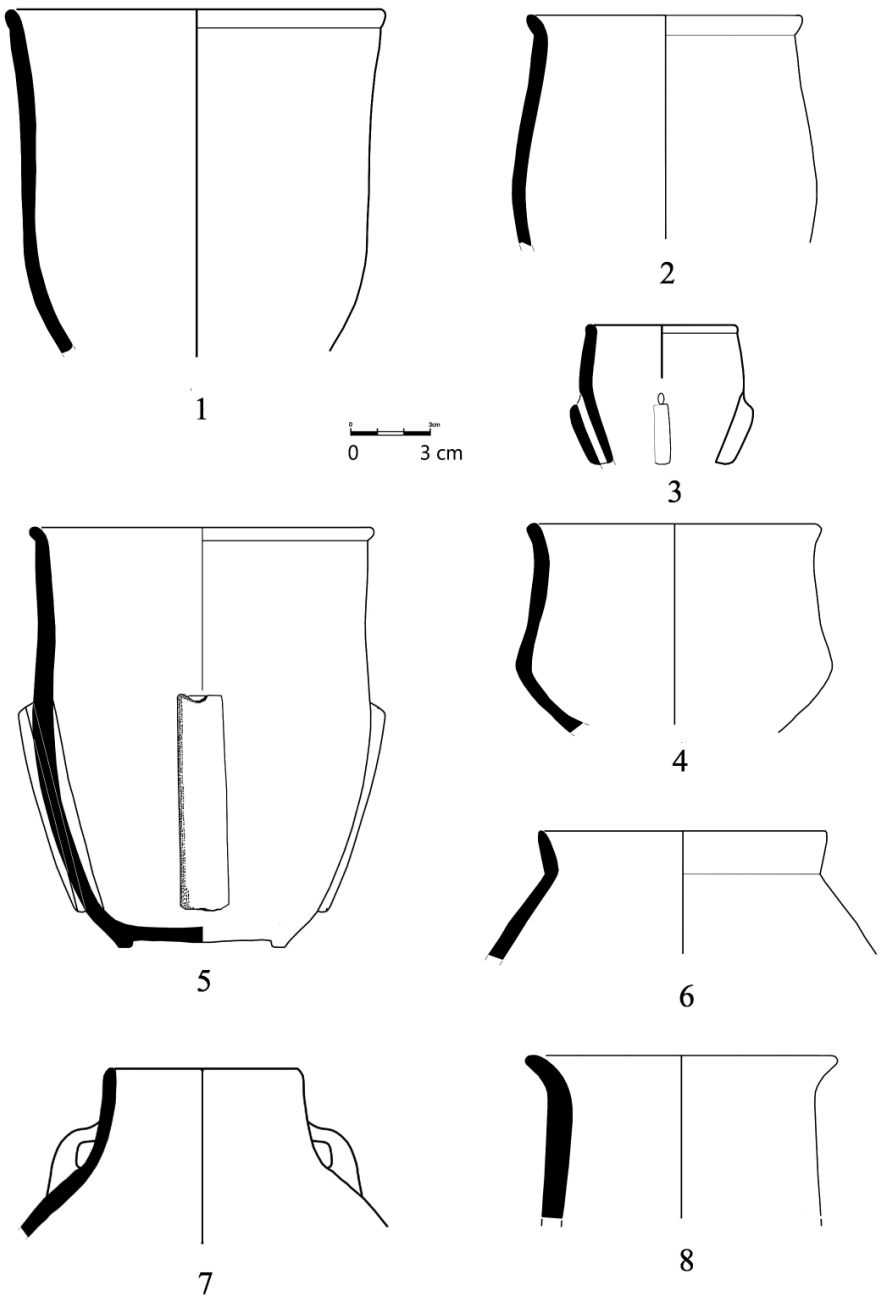

Fig. 12. Selected pottery forms ofPhase IV.

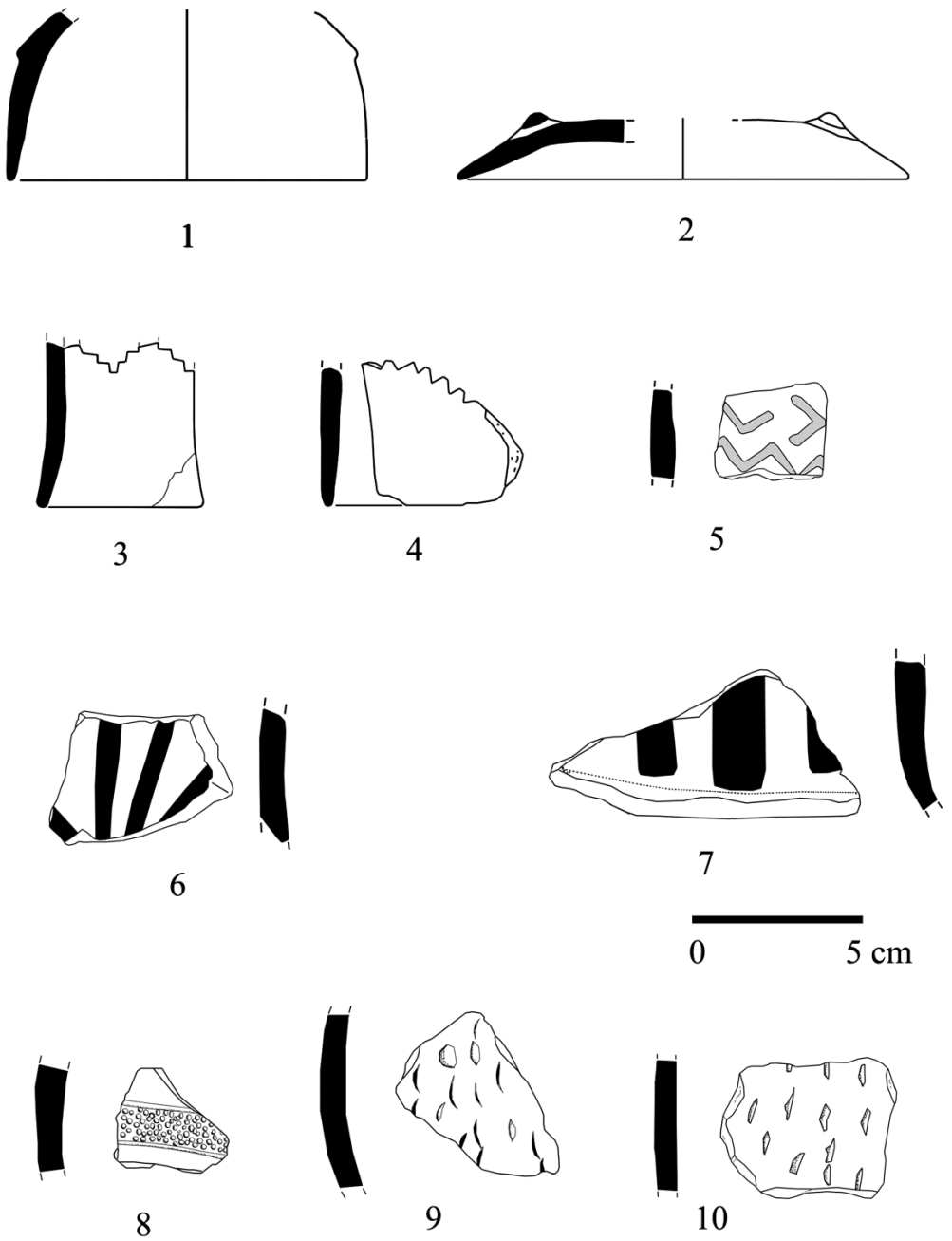

Fig. 13. Selected pottery from Phase IV.

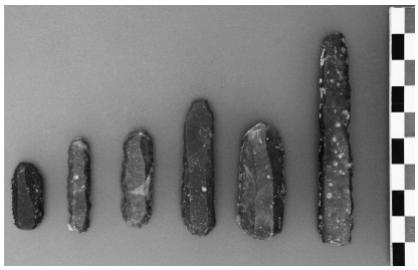

Fig. 14. Macro blades from Balkan Flint.

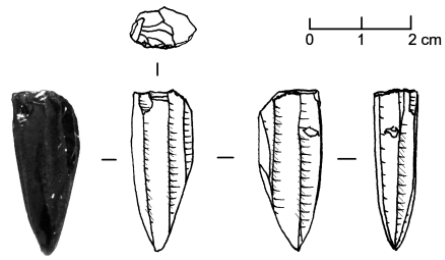

Fig. 15. An obsidian bullet core from Phase IV.

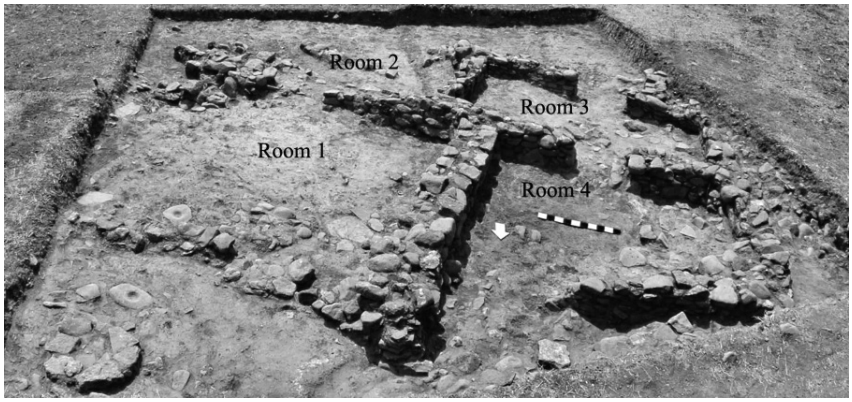

Fig. 16. Building 3 from Phase III.

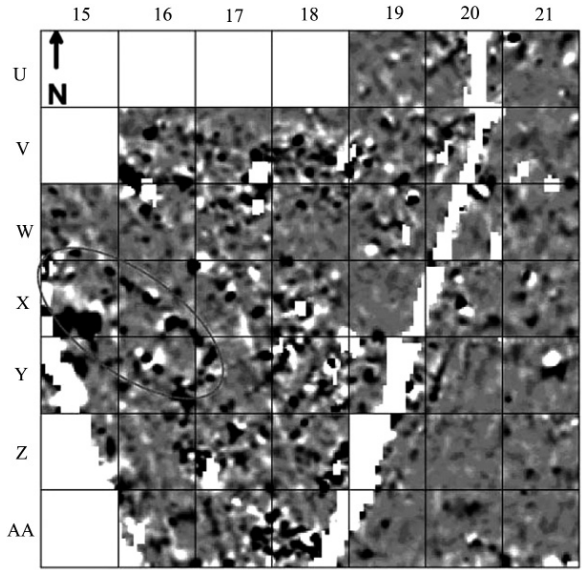

Fig. 17. Magnetometry data from the eastern part of the site, showing buried buildings.

Fig. 18. An anthropomorphic and a zoomorphic figurine from Phase III.

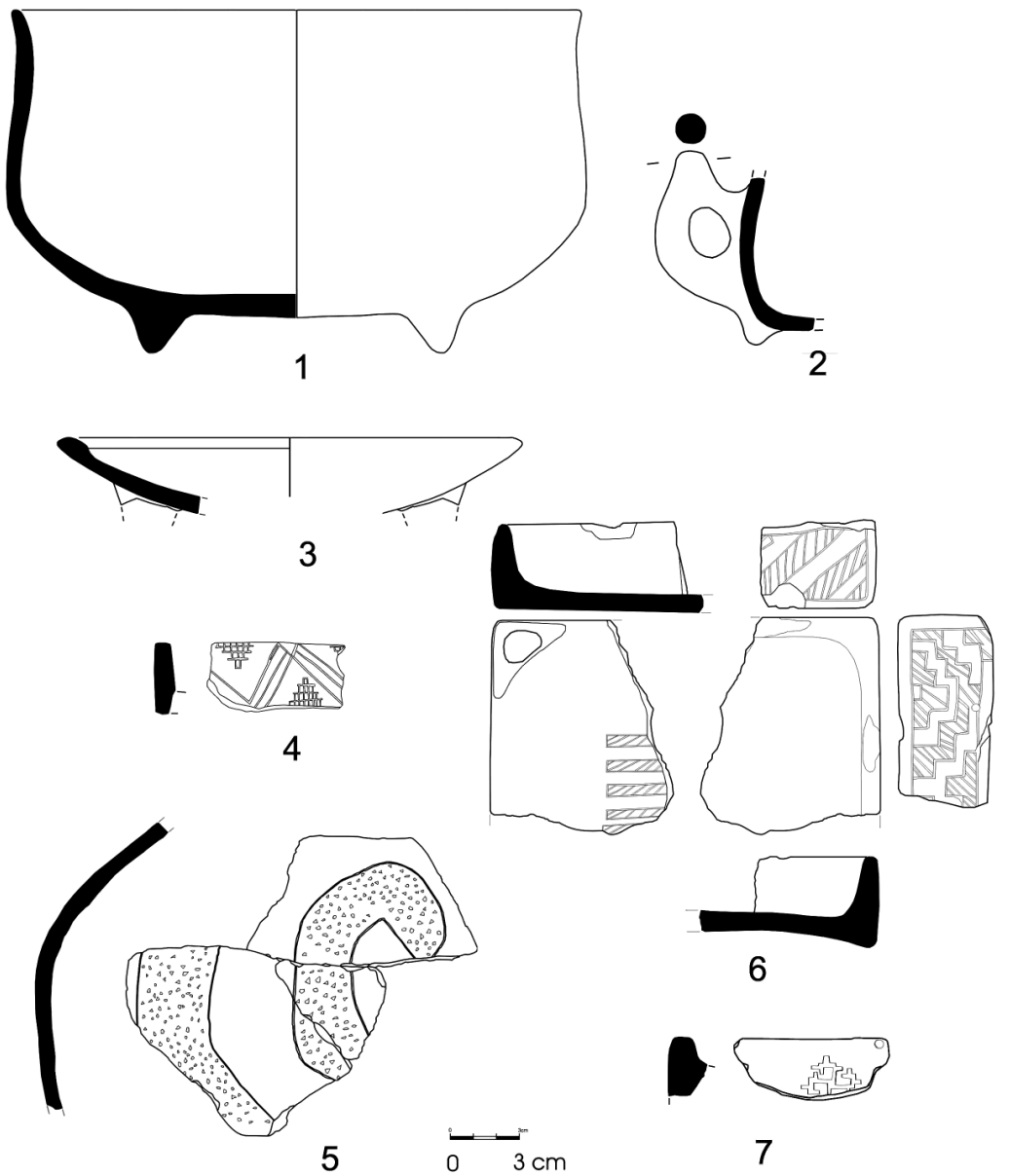

Fig. 19. Selected pottery forms of Phase III.

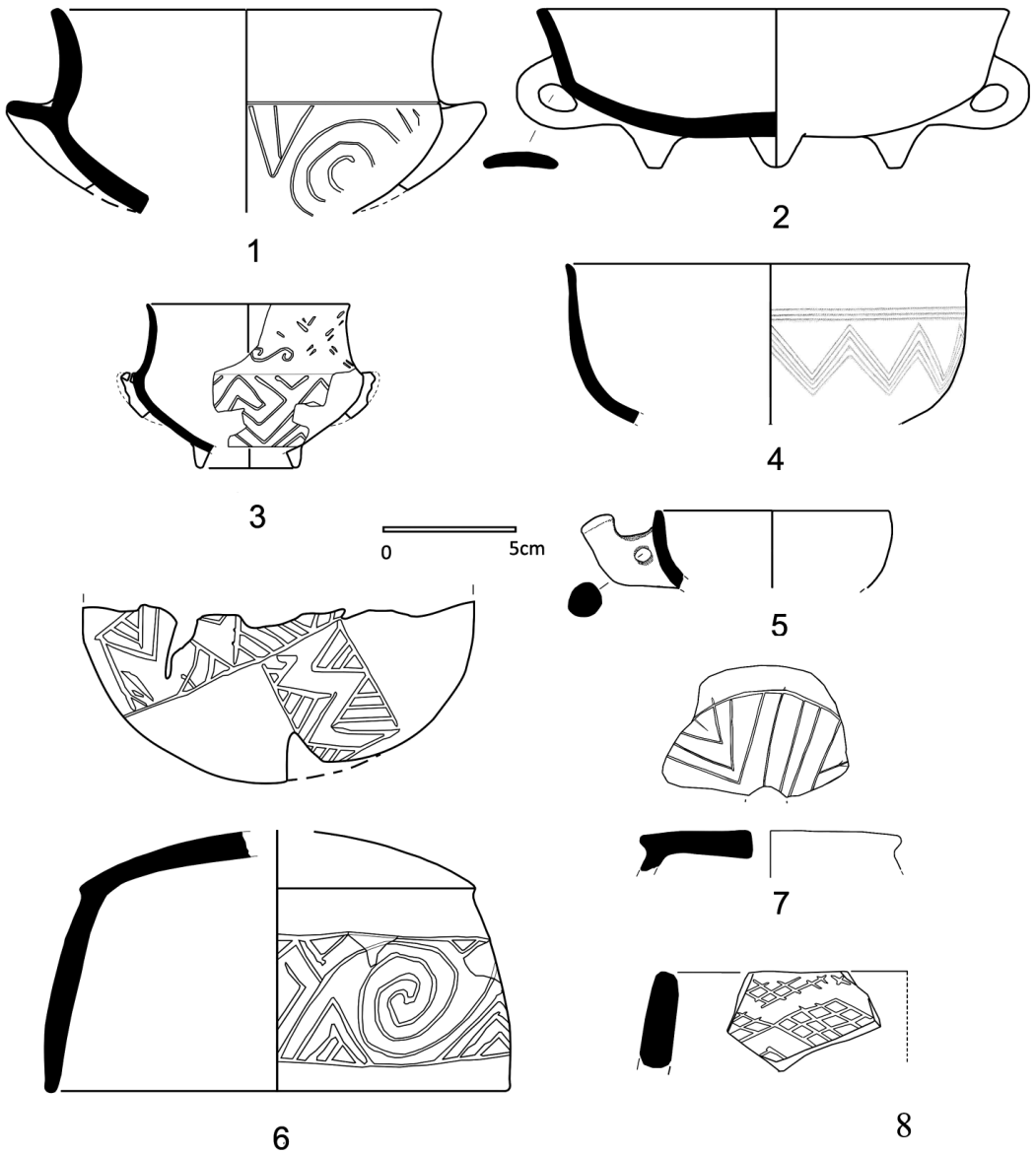

Fig. 20. Selected pottery forms of Phase III.

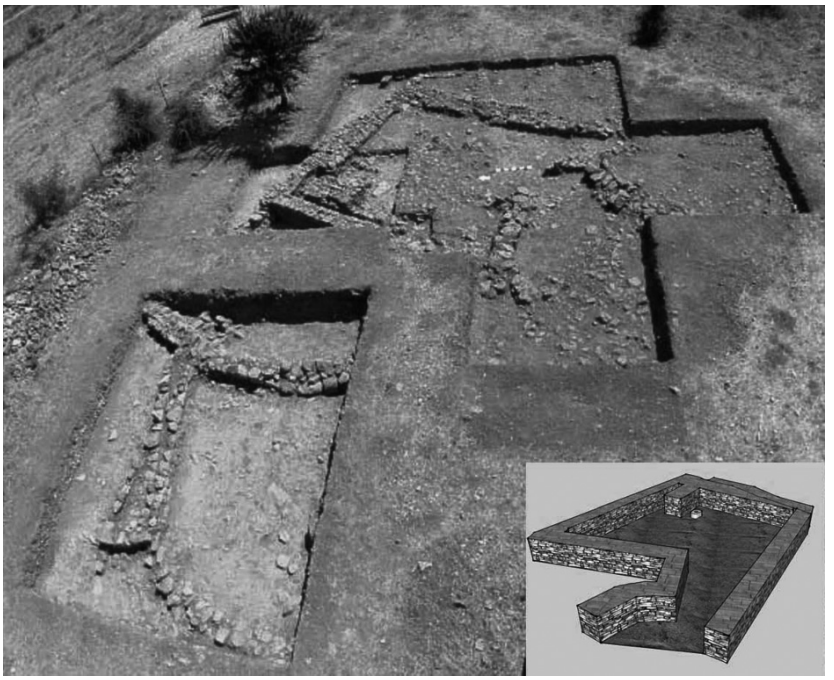

Fig. 21. Building 1 from Phase II.

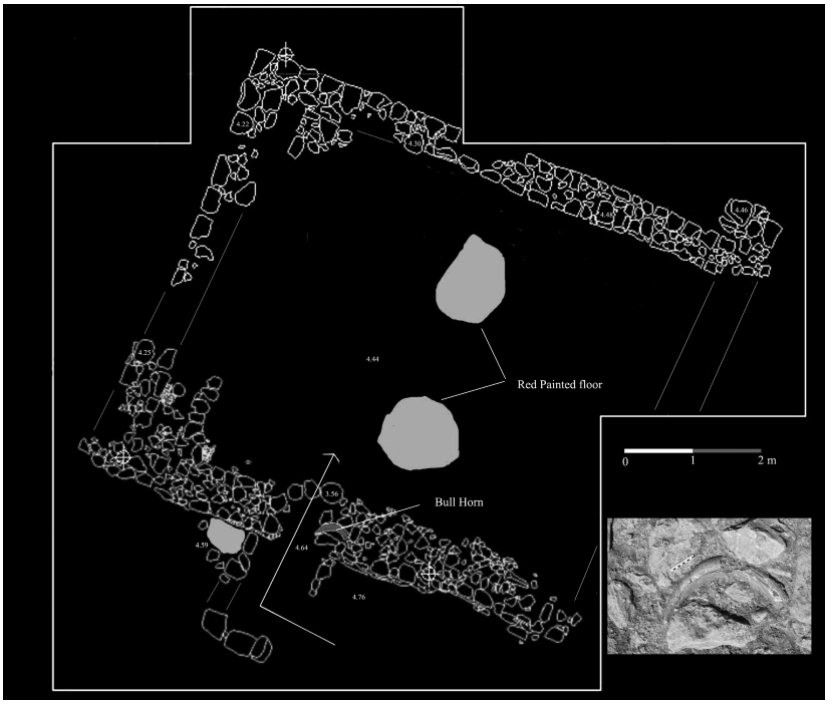

Fig. 22. Plan of the Chalcolithic Building 4 and a bull horn recovered in the entrance.

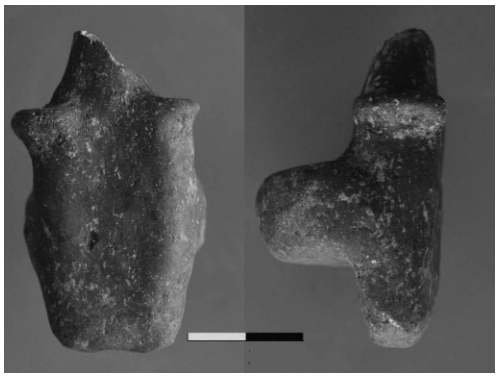

Fig. 23. A figurine from Phase II.

Fig. 24. Characteristic Phase II sherds.

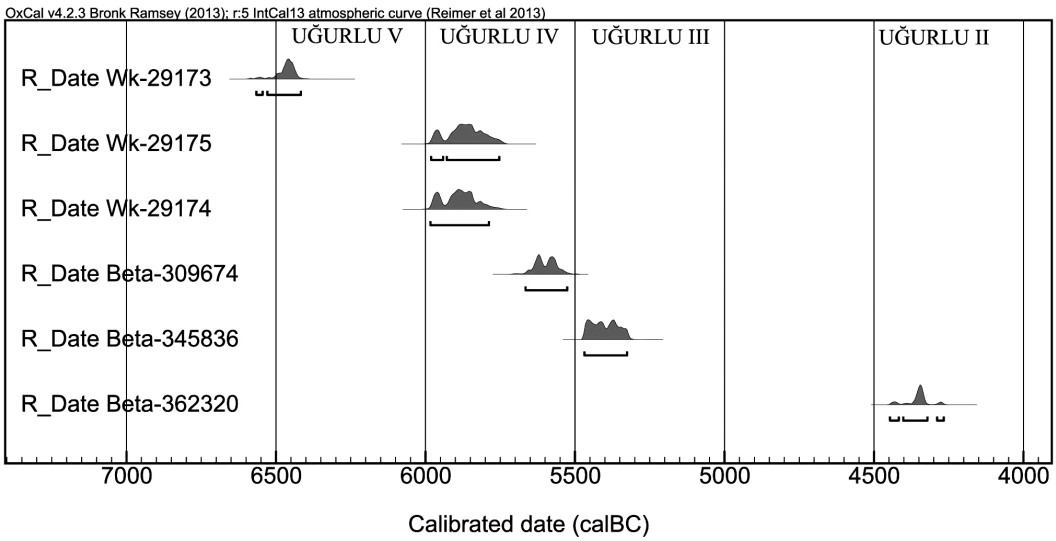

Fig. 25. Uğurlu Radiocarbon Dates.

« QUESTIONS MÉTALLURGIQUES ». Un séminaire interdisciplinaire UMR 7044, CNRS Strasbourg (MISHA) – 2009-2012 2e partie

Statuette de cheval
(voir la contribution de S. Heinz, p. 218).

Le dossier « Questions métallurgiques » rassemble les contributions au séminaire interdisciplinaire de recherche de l'UMR 7044 de Strasbourg. Ce second volet du dossier est de nature exclusivement archéologique, contrairement au premier[1]. Partant de l'Anatolie (J. Patrier) en direction du sud, E. van der Wilt et S. Heinz nous font découvrir la métallurgie d'Héracléion-Thonis et ses liens avec le reste du Bassin Méditerranéen. De l'étude du travail du fer anatolien à celui du bronze et du plomb égyptiens en passant par l'analyse des récipients de plomb, les trois auteurs apportent leurs propres éléments de réponse aux « questions métallurgiques ».

Alice Mouton

[1] Le premier volet de ce même dossier est paru dans *Anatolica* 38, 2012.

ANATOLICA XL, 2014

LE FER AU DÉBUT DU IIE MILLÉNAIRE AV. J.-C. : nouveaux apports de l'archéologie anatolienne

*Julie Patrier**

Résumé

De nombreuses études ont été menées sur le fer au Proche-Orient ancien à partir de différents aspects (archéologique, technologique, lexicographique, etc.) mais le domaine anatolien souffre toujours de l'absence d'une synthèse véritable. Le but de cet article est certes plus modeste mais pense pouvoir y contribuer grâce au regroupement des données sur la question. Ainsi, après avoir dressé un rapide bilan des recherches passées, je proposerai un catalogue raisonné des vestiges archéologiques ayant pu être recensés pour le début du IIe millénaire av. J.-C. en Anatolie (soit de 2000 à 1700 av. J.-C. environ), vestiges dont le nombre peut être augmenté grâce à de nouvelles attestations. En effet, on recense maintenant des objets en fer sur les sites d'Acemhöyük, Alişar Höyük, İkiztepe, Kaman-Kalehöyük, Kusura et Kültepe.

Numerous studies have been conducted on the iron in the ancient Near East from different aspects (archaeological, technological, lexicographic, etc.) but the Anatolian area still suffers from the absence of a true synthesis. The purpose of this article is more modest but, thanks to some additions to be proposed, hopes to contribute to such a study. After a quick review of past research, I propose a catalog of archaeological remains that have been identified for the early second millennium BC in Anatolia (from ca. 2000 to 1700 BC). Indeed, the remains number can be increased through new attestations as we now found iron objects in Acemhöyük, Alişar Höyük, İkiztepe, Kaman-Kalehöyük, Kusura and Kültepe.

Bon nombre d'études ont déjà été menées sur les débuts de l'utilisation du fer en Anatolie et il serait illusoire de prétendre révolutionner les acquis dans ce domaine. Malgré tout, de nombreuses zones d'ombres persistent et la réalisation d'un travail de synthèse regroupant l'ensemble des sources, notamment par le biais d'une étude interdisciplinaire, reste encore à faire.

Suite à une communication sur l'utilisation du fer en Anatolie avant le Ier millénaire av. J.-C.[1], j'ai pu constater que la liste des objets en fer du début du IIe millénaire av. J.-C. pouvait être légèrement augmentée par rapport au dernier catalogue qui en avait été dressé (Jean 2001 : 171-172). En effet, la période des comptoirs assyriens de Cappadoce (*ca.* 1945-1700 av. J.-C.)[2] a fait l'objet de moins d'attention pour les vestiges archéologiques que la période hittite, contrairement aux informations contenues dans les textes, déjà bien

* Post-doctorante ANR ViGMA (UMR 7044), dirigé par A. Mouton (http://vigma.misha.fr/accueil.htm) et chargée de cours à l'université de Strasbourg. Email: patrierj@yahoo.fr

[1] Cet article est tiré d'une intervention donnée le 26 janvier 2012 dans le cadre du séminaire de l'axe de recherches *« Questions métallurgiques en milieu anatolien et syro-hittite »* de l'UMR 7044, dirigé par A. Mouton (CNRS) et I. Weygand (chercheure associée). Je tiens ici à remercier Ph. Quenet pour m'avoir confié le dossier qu'il avait réuni sur le fer lors de la rédaction de sa thèse, publiée en 2008. Je remercie également le Professeur J.-P. Descoeudres (Genève) pour m'avoir confié son exemplaire de *Mediterranean Archaeology* 14 (2001), épuisé et non disponible à Strasbourg, volume fondamental pour cette étude puisque consacré aux origines de la métallurgie du fer dans le bassin méditerranéen. Article rendu à l'éditrice le 16 avril 2012.

[2] Michel 2008 : 73. Ces dates varient légèrement dans Kulakoğlu 2011 : 1019, qui donne : niveau II = 1950-1836 av. J.-C. et niveau Ib = 1833-1719 (?) av. J.-C.

traitées[3]. Aussi, je ne traiterai ici que des données archéologiques, sans entrer dans le détail des aspects techniques.

Le principal but de cet article sera donc de réunir la documentation disponible pour le début du IIe millénaire av. J.-C. afin de la rendre accessible pour une analyse ultérieure plus approfondie.

I. BRÈVE PRÉSENTATION DES RECHERCHES

Un grand nombre d'études sur le fer, plus ou moins détaillées, ont vu le jour pour l'ensemble du Proche-Orient ancien[4] dont les principaux résultats sont rappelés ici. Dans le cas de l'Anatolie, la question des ressources en fer a été bien analysée[5]. On retiendra principalement que le fer est très rare à l'état natif ou sous forme de météorite, mais qu'il est très abondant sous forme de minerai[6]. En Anatolie, des dépôts importants sont présents sur tout le territoire (plus de 600 gisements dont 25 sites majeurs). La possibilité d'exploiter le fer à une échelle beaucoup plus vaste que pour les autres métaux et à coût moindre serait donc vite apparue[7]. Ces différents aspects ont alimenté la discussion sur l'utilisation ou non du fer météorique à partir duquel on a longtemps pensé que les premiers objets en fer avaient été confectionnés[8]. Cette hypothèse tient au fait que certains des termes anciens utilisés pour décrire le fer impliqueraient une provenance céleste[9], au caractère rare et cher du métal avant le Ier millénaire av. J.-C., mais aussi au fait que les météorites contiennent du fer sous forme de métal. De plus, une haute teneur en nickel serait spécifique des fers météoriques et sa présence dans certaines analyses d'objets en fer a renforcé cette idée. Mais les avancées de la recherche ont permis d'affirmer que la teneur en nickel n'était pas « discriminante en soi »[10] pour diverses raisons qu'il ne convient pas de détailler ici[11]. Par ailleurs, d'autres analyses ont révélé l'absence de nickel, impliquant nécessairement un fer d'origine terrestre[12] et des erreurs de mesures ont parfois été commises, ce qui a entraîné des attributions erronées[13].

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[3] Pour les références, cf. ci-dessous ;

[4] Une « bibliographie annotée » a été consacrée à la recension des études métallurgiques publiées jusqu'en 1986, cf. Molloy 1986.

[5] Cf. entre autres De Jesus (1978, sur les ressources métalliques), Ryan (1960, sur les minéraux) ou Tylecote (1981, sur le sable riche en fer de la Mer Noire) et, pour un rapide point sur la question, Jean 2001 : 164-166, Muhly *et al.* 1985 : 74 et McConchie 2004 : 39-43. Voir aussi Maxwell-Hyslop 1974 et Nishiwaki 1970 : 105-108 et 139-142.

[6] Rapp 2009² : 166.

[7] Jean 2001 : 166 et Muhly *et al.* 1985 : 69.

[8] Cf. par exemple Wainwright 1936 : 7 ou Yalçın 1999.

[9] Pour des renvois à des études lexicographiques, cf. dans cet article, n. 20. Voir pour l'Égypte, Helck 1975 : 1210, Valloggia 2001 et Wainwright 1932, 1935 et 1936.

[10] Quenet 2008 : 256.

[11] Voir par exemple Mohen 1990 : 68, Piaskowski 1982 et 1994, Quenet 2008 : 256, Rapp 2009² : 168 et Yalçın 1999 : 184. Il semble maintenant admis qu'un fer météorique doit contenir au moins 5 % de nickel (Yalçın 1999 : 180).

[12] Cf. par exemple Quenet 2008 : 256 ou Yalçın 1999 : 180.

[13] Cf. le commentaire de Muhly *et al.* 1985 : 71 à ce sujet. On notera que des analyses ont récemment été pratiquées sur une dague en fer (A1.K.14) connue de longue date et provenant des tombes princières d'Alaca Höyük. Cette dague, datant de la

Ainsi, si des fragments de météorites ont pu avoir été utilisés, ce n'est pas le cas pour l'ensemble des objets en fer, y compris pour les plus anciens[14].

La question des techniques et notamment leur date et lieu d'apparition ainsi que leur évolution ont souvent retenu l'attention des chercheurs[15]. Le fer à l'état pur ne présente que peu d'intérêt et est marqué « surtout par sa propension à l'oxydation »[16]. Contrairement à ce que l'on pourrait imaginer de prime abord, il s'agit d'un matériau relativement malléable. L'adjonction de certains éléments permet en revanche de pallier ce problème en le rendant considérablement plus dur, ce qui est notamment le cas du fer carburé, c'est-à-dire allié au carbone. En fonction de cette teneur en carbone, on obtient des aciers (moins de 1,8 % de carbone) ou de la fonte (entre 2,1 % et 6,67 % de carbone, 6,67 % étant le seuil de saturation). La date d'apparition des premiers aciers fait par ailleurs l'objet de nombreux débats, comme on le verra ci-dessous[17].

En ce qui concerne l'étude des vestiges archéologiques en Anatolie a donné lieu à un grand nombre de publications[18], la dernière en date étant celle d'É. Jean en 2001. Certaines d'entre elles se situent à la croisée entre archéologie, épigraphie et métallurgie[19].

En effet, l'apparition de l'écriture en Anatolie au début du II^e^ millénaire av. J.-C. permet d'éclairer d'un jour nouveau nos connaissances sur le fer en augmentant significativement et en diversifiant les données. Ces sources textuelles (paléo-assyriennes mais aussi hittites) ont fait l'objet de plusieurs analyses, sous forme d'éditions ou commentaires de textes ou encore d'études lexicographiques plus spécifiques[20]. On n'a ainsi pu que constater le décalage qui existe entre les nombreuses attestations fournies par les sources écrites et la pauvreté des vestiges archéologiques.

Malgré les publications susmentionnées, les informations sur le fer restent souvent dispersées, les analyses métallurgiques peu nombreuses et l'étude de ce matériau souvent intégrée à des recherches plus générales sur la métallurgie.

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deuxième moitié du III^e^ millénaire av. J.-C., aurait été réalisée en fer météorique. Voir pour cette question Nakai *et al.* 2008.

[14] Outre les publications déjà citées sur la question, on renverra aussi à Bjorkman 1973, Buchwald 1975, Buchwald 2005 : 13-38, Chadwick 1989, Kelley et Milone 2011², Knox 1987 et Photos 1989.

[15] Beaucoup d'études pourraient être citées et notamment Craddock 1995, Craddock et Lang 2003, Gale *et al.* 1990, Maddin 1975, Mangin 2004, Pigott 1982 et 1996, Routhier 1999 (chapitre 9), Tylecote 1970 et 1992² et Yener 2000. Les ateliers de métallurgistes en Anatolie ont fait l'objet d'une étude spécifique de la part d'A. Müller-Karpe (1994 et 2000).

[16] Lavergne 2008.

[17] Sur la technologie de l'acier, cf. aussi Rehder 1989, Richardson et Jeffes 1949, Tholander 1971 et Wagner 1990. Pour une comparaison avec l'Égypte, cf. Williams et Maxwell-Hyslop 1976.

[18] Toutes ne peuvent être citées ici. On renverra principalement à Maxwell-Hyslop 1980, Muhly 1993-1997 : 121-123, Muhly *et al.* 1985, Waldbaum 1980, Wertime et Muhly 1980 et Yalçın 1997, 1998, 1999 et 2008, où on trouvera la bibliographie plus ancienne.

[19] Voir aussi Forbes 1950 : 378-473 et 1964, Moorey 1999² : 278-292 et Przeworski 1939 : 138-166.

[20] Pour la période des comptoirs assyriens de Cappadoce, cf. Dercksen 2005 et 2010b, Maxwell-Hyslop 1972 et Michel 1991 : 167-182. Pour une synthèse globale sur les sources écrites du début du II^e^ millénaire av. J.-C. (paléo-babyloniennes et paléo-assyriennes) concernant le fer, on renverra au travail de K. Reiter (1997 : 344-400). Plus spécifiquement pour Mari (Syrie), cf. les toutes dernières synthèses d'I. Arkhipov (2009 et 2011), avec la bibliographie antérieure. Pour la période hittite, cf. Kammenhuber 1996, Koşak 1986, Mouton 2012, Siegelová 1984, 1993, 2001, 2005 et 2008 et Valério et Yakubovitch 2010.

II. LES VESTIGES ARCHÉOLOGIQUES EN FER DU DÉBUT AU IIE MILLÉNAIRE AV. J.-C.

Comme cela a souvent été souligné dans les diverses études sur le sujet, on rencontre de grandes difficultés lorsqu'on tente d'établir un catalogue exhaustif des objets en fer, quelle que soit le période étudiée. Cela est dû notamment au matériau lui-même et à sa grande propension à se corroder (l'ensemble des objets en fer ne sont que rarement publiés mais plus souvent mentionnés de manière ponctuelle) ainsi qu'au manque encore important d'analyses[21].

Le catalogue le plus récent recensant les objets anatoliens en fer (du Chalcolithique à l'Âge du Fer) a été publié par É. Jean en 2001[22]. Le chercheur dénombrait trois sites pour le Bronze Moyen (Acemhöyük, Alişar Höyük et Kusura) et donnait un catalogue de cinq objets[23]. É. Jean mentionnait également des découvertes de Kaman-Kalehöyük. Ce catalogue peut maintenant être augmenté avec des pièces provenant d'İkiztepe et de Kültepe ainsi que de nouvelles attestations de Kaman-Kalehöyük (cf. **carte**).

Afin de fournir un aperçu le plus complet possible de la situation actuelle, je résumerai ici les données fournies par les sites déjà traités par É. Jean tout en y ajoutant les nouvelles données.

Acemhöyük

Le site d'Acemhöyük a livré une boîte en ivoire (n° Ac.o : 24 ; 10,3 x 7,2 cm) incrustée notamment de 9 clous en fer, en alternance avec des clous en lapis-lazuli mais aussi avec des clous en bronze cerclés d'or. Elle porte également plusieurs frises décoratives[24]. É. Jean indique que la boîte a été découverte dans le niveau III, « dans une structure brûlée sur un sol à 20 cm au-dessus de la fondation en pierres d'un bâtiment contemporain des palais »[25]. Selon les fouilleurs, elle aurait été mise au jour dans le nord-ouest du site[26]. L'origine de Syrie du Nord ou de l'Anatolie du Sud-Est, proposée pour cette boîte par N. Özgüç et reprise par É. Jean, ne semble en revanche pas assurée. N. Özgüç envisageait également une provenance de Karkemiš. M. Mellink imagine quant à elle que la boîte pourrait avoir été réalisée à Acemhöyük même[27] tandis qu'I. Ziffer a plus récemment proposé d'y voir une production d'Ebla[28].

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[21] Pour cette question, voir Jean 2001 : 166 ou Muhly *et al.* 1985 : 71 par exemple. Plus généralement, sur les difficultés rencontrées lors des recherches menées sur le fer, cf. McConchie 2004 : 12-14.

[22] Cf. Jean 2001 : 171-172.

[23] Le même catalogue (mais moins détaillé) est donné, pour cette période, dans Yalçın 1999 : notamment 178.

[24] Özgüç N. 1976. Voir aussi Muhly 1993-1997 : 122-123 et Jean 2001 : 172.

[25] Jean 2001 : 172.

[26] Cf. Özgüç 1977 : 623-624. La localisation précise de la découverte de la boîte n'est pas assurée et la chronologie du site est encore problématique. En effet, il avait été suggéré que le niveau III soit contemporain du niveau II du *kārum* Kaneš. En réalité, il correspondrait au niveau II du *kārum* Kaneš et à une partie du niveau Ib, voire, selon C. Michel, serait seulement contemporain du *kārum* Ib (Michel 2011 : 316).

[27] Mellink 1993 : 425.

[28] Ziffer 2005 : 148.

Alişar Höyük

Le site d'Alişar Höyük a livré plusieurs objets en fer, tous provenant du niveau Alişar II[29]. On retiendra notamment de « petits éléments d'incrustations » en fer, comme une tête d'épingle en bronze (n° e 1555), non analysés[30]. É. Jean relève que les références à ces objets apparaissent souvent sous différentes dénominations (« iron pin » ou « small piece of decorative inlay » par exemple)[31].

Ont également été identifiés des « fils de fer », « petits morceaux probablement utilisés pour attacher armes et outils à leurs manches ; un seul exemple est donné, avec une pointe de flèche »[32] (n° d 2948), non analysée[33].

On ajoutera enfin « quelques fragments probables supplémentaires très corrodés » et « non analysés »[34].

İkiztepe

Un fragment de fer « météoritique » daté du Bronze Moyen provient d'İkiztepe[35]. L'analyse de l'objet a montré une importante teneur en nickel, d'où l'interprétation proposée par le fouilleur[36]. Il s'agit d'une pièce travaillée, de forme sphérique avec une perforation au sommet visible sur l'illustration publiée. Ö. Bilgi n'en fournit en revanche ni les dimensions ni le poids.

Kaman-Kalehöyük

Le site de Kaman-Kalehöyük[37] a livré plusieurs attestations de vestiges en fer pour les II^{e} et I^{er} millénaires av. J.-C. qu'il est possible, au moins pour certains objets, d'attribuer spécifiquement aux phases IIIc (période des comptoirs assyriens de Cappadoce) et phase IVa (2100-1950 av. J.-C.)[38], mais plusieurs difficultés sont à relever. Tout d'abord, tous les objets en fer découverts sur le site n'ont pas encore été analysés. Par ailleurs, les objets analysés l'ont souvent été à plusieurs reprises et sont donc régulièrement republiés, aspect qui rend parfois les données un peu confuses[39]. De plus, les objets ne portent pas

[29] Comme É. Jean (2001 : 171), j'ai pris le parti de dater ces découvertes de la période des comptoirs assyriens de Cappadoce, bien que le niveau Alişar II comprenne de manière générale l'ensemble du II^{e} millénaire av. J.-C.

[30] Von der Osten 1937 : 259, fig. 284 et 273.

[31] Jean 2001 : 171. Voir aussi Dercksen 2005 : 31, n. 46, Yalçın 1999 : 178, tableau 1 et 181 et Waldbaum 1980 : 74.

[32] Jean 2001 : 171.

[33] Cf. von der Osten 1937, 264, 273, 265, fig. 290 ainsi que Jean 2001 : 172 et Waldbaum 1978 : 20 et 1980 : 74.

[34] Jean 2001 : 172. Voir aussi von der Osten 1937, 273 et Waldbaum 1978 : 20 et 1980 : 74.

[35] Bilgi 2001 : 31, 68 et 102, n° 97 : İ/76-296.

[36] Bilgi 2001 : 31 : « [*It*] contains intensive iron and nickel according to the analysis ».

[37] Pour une présentation générale du site, cf. dernièrement Omura 2011.

[38] Chacune des « phases » est subdivisée en niveaux mais il est relativement malaisé de dire à quoi ceux-ci correspondent exactement.

[39] Le dernier numéro de la série *Anatolian Archaeological Studies*/*Kaman-Kalehöyük*, à savoir le numéro 17, date de 2008 ; depuis seuls de très courts rapports préliminaires des fouilles sont publiés annuellement en turc dans les *Kazı*

de véritables numéros d'inventaire et ne peuvent être différenciés que par leur date de découverte[40]. Enfin, certains objets ne sont pas attribués à une phase précise mais seulement à l'ensemble de la phase III (couvrant tout le II^e millénaire av. J.-C.)[41]. Le catalogue fourni ici ne se fonde donc que sur les publications accessibles et ne prend en compte que les objets assurément mis au jour dans les phases IIIc et IVa[42].

Ainsi, contrairement à ce que l'abondante littérature publiée sur les découvertes en fer du site aurait pu laisser croire, seul un nombre relativement restreint d'objets a pour le moment été publié pour les périodes qui nous intéressent (phases IIIc et IVa) ; on en compte au total neuf clairement identifiés et analysés. Trois proviennent spécifiquement de la phase IIIc (940727, 940714[-1] et 940714[-2][43]) ; la position stratigraphique de deux autres a été réévaluée en 2007 (920711 et 940805), comme appartenant à la phase IIIc. Quatre autres fragments proviennent assurément de la phase IVa. Enfin, d'autres fragments de fer ont également été mis au jour sur le site mais n'ont pas encore été analysés et ne peuvent être précisément détaillés : des scories (au moins deux ?), découvertes en 2007, semblent provenir d'une structure paléo-assyrienne et un objet, dégagé en 2009, pourrait également appartenir à la phase IVa. Par ailleurs, H. Akanuma mentionne, en 2008, 17 objets en fer issus des phases IIIc et IVa sans dire à quoi ils correspondent, leur analyse étant en cours.

Ces objets sont ici présentés par date de découverte, de la plus ancienne à la plus récente :

- Une scorie, date de découverte : 920711, secteur nord IV, carré XXXIII-55, niveau provisoire (« provisional layer ») 51, initialement attribuée de manière générale à la phase III (Akanuma 1995), puis à la phase IIIc (Akanuma 2007). La possibilité de classer cette scorie dans la phase IIIc modifie l'analyse du chercheur et permet dès lors d'envisager que des objets en fer aient pu être produits sur le site-même[44].
- Un fragment, date de découverte : 940714(-1), secteur nord XII, carré XLIX-55 (PP), niveau provisoire (« provisional layer ») 12, pièce R150, phase IIIc, contenant entre 0,2 et 0,3 % de carbone, considéré comme un acier hypoeutectoïde (à savoir un acier contenant moins de 0,8 % de carbone)[45].
- Un fragment, date de découverte : 940714(-2), secteur nord XII, carré XLIX-55 (PP), niveau provisoire (« provisional layer ») 12, pièce R150, phase IIIc, contenant entre 0,1 et 0,2 % de carbone, considéré comme un acier hypoeutectoïde[46].

Sonuçları Toplantısı.

[40] Dans le cas où plusieurs objets ont été dégagés le même jour, ce numéro n'est donc plus discriminant.

[41] É. Jean par exemple avait à l'époque classé l'ensemble des objets en fer provenant du site dans le Bronze Récent faute d'informations plus précises (Jean 2001 : 178-179).

[42] Je renvoie pour cela aux publications en anglais de H. Akanuma en 1995, 2002, 2003, 2004, 2005, 2006 et 2007. Voir aussi Svoboda *et al.* 1994. Pour les articles parus précédemment en japonais, cf. Akanuma 1997, Hirai *et al.* 1999 et Saito 1999.

[43] Les numéros donnés ici à la suite de la date ont été ajoutés par l'auteur du présent article uniquement dans le souci d'individualiser clairement les deux objets.

[44] Akanuma 2007. Cela n'était pas envisageable auparavant, aucun indice de production n'ayant jusqu'alors été mis au jour sur le site pour cette période (Akanuma 2005 : 154). Pour cet objet, voir aussi Akanuma 1995.

[45] Akanuma 2002, 2003, 2007.

[46] Sauf en 2004 : 163 et n. 2, où Akanuma ne le considère pas comme un acier. Pour cet objet, cf. Akanuma 2002, 2003, 2007.

- Un fragment, date de découverte : 940727, secteur nord XII, carré XLIX-54 (OO), niveau provisoire (« provisional layer ») 13, pièce R150, phase IIIc. Fer (« made of artificially produced iron »)[47].
- Un fragment, peut-être d'un outil coupant (« cutting-tool »), date de découverte : 940805, secteur nord XXIV, carré XLVIII-56, niveau provisoire (« provisional layer ») 13, daté initialement de la phase IIIb (Akanuma 2005), puis replacé dans la phase IIIc (Akanuma 2007), contenant entre 0,1 et 0,2 % de carbone[48], considéré comme un acier hypoeutectoïde.
- Un fragment de paroi de four, date de découverte : 010815, secteur nord IV, carré XXXVIII-55, niveau provisoire (« provisional layer ») 73, numéro d'année : 01000853, phase IVa[49].
- Un fragment, date de découverte : 010831, secteur nord IV, carré XXXIX-54, niveau provisoire 73-c, numéro d'année : 01000854, phase IVa, contenant entre 0,1 et 0,3 % de carbone, considéré comme un acier hypoeutectoïde[50].
- Un fragment de paroi de four, date de découverte : 020702, secteur nord IV, carré XXXVIII-54, niveau provisoire (« provisional layer ») 60, numéro d'année : 02000825, phase IVa[51].
- Minerai de fer (hématite), date de découverte : 020708, secteur nord IV, XXXVIII-55, niveau provisoire 81, numéro d'année : 02000824, phase IVa[52].
- S. Omura a également indiqué à H. Akanuma (2007 : 135) la découverte de plusieurs scories de fer dans une structure paléo-assyrienne lors des fouilles de 2007 mais celles-ci n'ont, à ma connaissance, pas encore fait l'objet d'analyses ou de publication.
- 17 objets en fer des phases IIIc et IVa, non individualisés et en cours d'analyse, peuvent également être mentionnés[53].
- Enfin, différents sites internet font part d'une découverte récente à Kaman-Kalehöyük (peut-être en 2009) sans citer leur source ou la date de leur information[54]. Il s'agit pourtant, si cette découverte était confirmée, d'une donnée importante pour l'histoire de la métallurgie du fer. En effet, une pièce en acier (?) de 5 cm, peut-être une partie de couteau, proviendrait des niveaux datés de 2100-1950 av. J.-C. (phase IVa ?).

Les trois premiers échantillons cités ci-dessus, provenant assurément de la phase IIIc, révèlent des compositions différentes. H. Akanuma a de ce fait envisagé que la technologie de purification du minerai ait pu être, dans un premier temps, moins bien maîtrisée, mais aussi que l'approvisionnement en matériaux bruts ait se faire dans différentes régions[55].

[47] Akanuma 2002, 2003, 2007.

[48] Akanuma 2005 et 2007.

[49] Akanuma 2008. L'objet est décrit comme une masse d'une substance argileuse partiellement ou complètement fondue.

[50] Akanuma 2008.

[51] Akanuma 2008. L'objet est décrit comme une masse d'une substance argileuse partiellement ou complètement fondue.

[52] Akanuma 2008.

[53] Akanuma 2008 : 313.

[54] Cf., par exemple, http://www.hindu.com/thehindu/holnus/001200903261611.htm, http://www.phenomenica.com/2009/03/ironware.html ou encore http://www.archaeology.ws/2009-3-31.htm (dernière consultation le 24/03/2012). Ces pages internet semblent toutes dater de mars 2009 et il est probable qu'elles retranscrivent une interview de S. Omura, directeur actuel des fouilles de Kaman-Kalehöyük.

[55] Akanuma 2005 : 152 : « These results suggest that steel production technology had already been established before the establishment of the Hittite Empire, and the purification technology used to produce steel had been developing from the

D'autre part, les analyses réalisées sur le site depuis le début des fouilles ont principalement alimenté la question de la production d'acier dès les derniers siècles du III^e^ millénaire av. J.-C.[56]. En revanche, il n'a pas été possible à H. Akanuma de déterminer si cet « acier » avait été produit délibérément ou non. Le chercheur s'interroge ainsi sur les raisons d'un développement aussi précoce de cette production et sur le problème de la transition entre les phases IVa et IIIc.

Kusura

Le site de Kusura aurait livré un fragment de fer provenant du niveau C (1800-1600), non identifié et non analysé[57].

Kültepe

D'après H. Akanuma, le niveau Ib du *kārum* a livré deux « objets » (sans provenance précise) en fer (« artificially produced iron »)[58]. La composition chimique de ces « objets » serait différente de celle des découvertes de Kaman-Kalehöyük[59].

Par ailleurs, deux masses de minerai contenant du manganèse et du fer ont été mises au jour dans la maison de Peruwa (niveau II) en 1951. T. Özgüç a interprété la pièce comme un atelier car le sol était pavé[60]. Il s'agirait peut-être alors de la pièce 7[61]. J.G. Dercksen relève que la description du minerai est ambiguë et varie selon les publications de T. Özgüç (notamment en ce qui concerne la proportion de fer)[62].

Enfin, des expositions récemment consacrées aux découvertes faites sur le site ont révélé la présence d'épingles ou parties d'épingles en fer, pouvant être plaquées d'or et mises au jour dans des tombes de Kültepe[63]. Pour deux d'entre elles, on dispose d'une photo et de quelques indications. Elles sont conservées au Musée des civilisations anatoliennes d'Ankara, sont datées de ca. 1830-1700 av. J.-C. (soit le niveau Ib) et mesurent

period of Stratum IIIc to that of Stratum IIIb ». Les échantillons testés de la phase IIIb montreraient une plus grande pureté du matériau. Cf. aussi Akanuma 2003 : 145 et 2005 : 154.

[56] Akanuma 2002 : 197, 2003 : 137 et surtout 2008.

[57] Cf. Lamb 1937 : 39 et Lamb 1938 : 217 et s. Pour des commentaires, cf. Jean 2001 : 172, Yalçın 1999 : 178, tableau 1 et 181 et Waldbaum 1980 : 74.

[58] Akanuma 2007 : 125. Ces objets ne seraient donc pas en acier. Cf., pour ces analyses, Akanuma 2003 : 138 (il est question d'un objet en fer du niveau Ib en 6 fragments formant soit deux parties d'un même objet soit deux objets différents, l'un ayant une forme de plaque [« plate »], l'autre une forme de barre [« bar »] ; le chercheur semble plus pencher pour deux objets différents). Voir aussi Akanuma 2005 : 152 : ces fragments contiendraient beaucoup d'impuretés sulfuriques qui proviendraient des matériaux bruts utilisés dans la production du fer (« raw materials used in smelting iron »).

[59] Akanuma 2003 : 145.

[60] Cf. Müller-Karpe 1994 : 55.

[61] Cette maison de marchand anatolien est bien connue et régulièrement citée par le fouilleur de Kültepe. On renverra principalement à Özgüç T. 1959 : 92-94, fig. 50-52. Pour une bibliographie complète sur cette demeure, cf. Patrier 2011, vol. 2 : 495.

[62] Cf. Dercksen 2005 : 28 et 32, n. 48 auquel je renvoie pour un résumé des différentes manières dont ces vestiges ont pu être cités.

[63] Özgüç T. 2003 : 114.

respectivement 12 cm (Kt. 92/k.083, inv. No. 1-12-92[64]) et 13 cm de long (Kt. 92/k.082, inv. No. 1-11-92[65]).

III. COMMENTAIRE

Cette étude permet de porter à 30 au minimum le nombre d'attestations avérées d'objets/fragments de fer mis au jour en Anatolie pour le début du II^e^ millénaire av. J.-C.[66] Ils se répartissent sur sept sites différents : Acemhöyük, Alişar Höyük, İkiztepe, Kaman-Kalehöyük, Kusura et Kültepe. Il s'agit d'épingles (parties d'épingles ou décors d'incrustation), de clous, de fils de fer, d'une « masse » de fer perforée, de scories, peut-être d'un élément de couteau et de fragments dont la forme originelle n'a pas toujours pu être déterminée. En dehors des exemples de Kaman-Kalehöyük, peu de vestiges ont été analysés (à l'exception de celui d'İkiztepe et de quelques attestations de Kültepe) et des doutes subsistent quant à la véritable nature du matériau de certains d'entre eux[67].

La principale question qui se pose au vu des résultats de Kaman-Kalehöyük est celle de la production d'acier, question qui fait encore débat[68]. Par ailleurs, dans ce domaine, il est alors souvent fait appel à des textes de la deuxième moitié du II^e^ millénaire av. J.-C. où le fer (AN.BAR) peut parfois être qualifié de « bon » (SIG_5), ce qui renverrait, pour certains, à l'acier[69], mais il me semble plus légitime d'interroger les sources contemporaines de nos vestiges. On remarque alors qu'une lettre paléo-assyrienne (*BIN* 4 50, l. 5) au moins mentionne peut-être déjà du « bon fer » (KÙ.AN SIG_5), mais les épigraphistes ne traduisent pas cette expression par « acier »[70]. Pour ce qui est des autres découvertes d'acier à haute époque, seule la petite barre (12 cm de long) mise au jour en 1996 à Boğazköy semblait dater

[64] Kulakoğlu et Kangal, 2011 : 310, n° 349 ; voir déjà Özgüç T. 2003 : 258, n° 290 (où elle était dite en bronze).

[65] Kulakoğlu et Kangal, 2011 : 310, n° 350 ; voir déjà Özgüç T. 2003 : 258, n° 291 (où elle était dite en bronze).

[66] Ce chiffre est obtenu en individualisant les 9 clous de la boite en ivoire d'Acemhöyük. On tombe à 21 en ne comptant qu'un objet pour la boite comme le faisait É. Jean qui arrivait alors à un total de 5. Le décompte est le suivant : 9 objets pour Acemhöyük, au moins 4 pour Alişar Höyük, 1 pour İkiztepe, 9 au moins pour Kaman-Kalehöyük, 6 pour Kültepe et 1 pour Kusura. Ce calcul devra être revu dans un avenir proche à la lumière des nouvelles découvertes de Kaman-Kalehöyük.

[67] On remarquera également qu'aucun de ces objets n'ont été pesés. Pour cette question, cf. Lacambre 2010.

[68] Pour différents points de vue sur ce sujet, cf. par exemple Jean 2001 : 180 (qui reste très mesuré), McConchie 2004 : 19-21, Muhly *et al.* 1985 : 68-69 (qui pensent que le procédé de la carburation n'avait pas été compris), Pigott 1996 : 161 (pour qui il n'apparaît pas que de l'acier était produit, mais qui précise qu'il y a très peu d'analyses), Rapp 2009² : 166 (pour qui la production éventuelle d'acier ne pouvait être qu'involontaire), Siegelová 2008 : 54-55 (selon qui la production d'acier serait improbable au II^e^ millénaire av. J.-C., la fonte [*cast-iron*] impossible), Yalçın 1999 : 181-183 ou Yalçın 2008 : 25 (pour qui la production d'acier est attestée).

[69] Cf. *KBo* 1.14 : lettre de Ḫattušili III (1267-1237 av. J.-C.) à un autre monarque, probablement un roi assyrien (sans doute Salmanazar I^er^ ; cf. Goetze 1949 et, pour des commentaires de cette lettre, Moorey 1999² : 289, Muhly *et al.* 1985 : 79, Siegelová 1984 : 156 ou Yalçın 1999 : 183 par exemple). Pour cette interprétation voir notamment Akanuma 2005 : 156 et Yalçın 1999 : 183.

[70] J.G. Dercksen comme C. Michel et K. Reiter ne traduisent d'ailleurs pas cette expression par « acier » mais respectivement par l'adjectif « extra fine » pour SIG_5 (Dercksen 2005 : 28), par « fer d'excellente qualité » (Michel 2001 : 270, texte 181) et « gutes *amūtum* » (Reiter 1997 : 114*), *amūtum* étant souvent traduit par « fer », ce qui est loin de faire l'unanimité (cf. *CAD* A/2 : 97-98, « a precious metal »).

du Bronze Ancien III[71], mais les analyses carbone 14 ont montré qu'elle daterait en réalité de l'Âge du Fer[72]. En dehors de l'Anatolie, une lame en acier souvent citée proviendrait également des niveaux du Bronze Moyen de Pella en Jordanie, mais sa datation semble également loin d'être assurée[73].

Pour le site de Kaman-Kalehöyük, on rappellera simplement que les objets mis au jour consistent principalement en fragments informes dont il me semble difficile de tirer, pour le moment, des conclusions définitives en l'absence de données plus assurées.

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L'inventaire dressé jusqu'ici des vestiges archéologiques en fer du début du II^e^ millénaire av. J.-C. a pu être revu. Les données sont plus nombreuses qu'on ne le pensait et il y a fort à parier que la multiplication des recherches et des analyses dans ce domaine permettra encore de faire évoluer cet état des choses. Cela reflète d'ailleurs ce qui ressort des sources écrites : si le fer est un métal rare et précieux à cette époque, il est aussi un métal commercialisé et travaillé, y compris, semble-t-il, pour réaliser des pièces de grandes dimensions[74]. En effet, l'étude des sources écrites permet d'augmenter considérablement le nombre mais aussi la variété des objets qui ont pu être confectionnés en fer au début du II^e^ millénaire av. J.-C. Il faut également garder en mémoire que l'histoire du fer en Anatolie ne débute pas à cette période mais bien avant, même si les traces demeurent encore ténues[75].

Il m'apparaît donc que la question du fer en Anatolie, bien que déjà souvent abordée, mériterait d'être reprise dans son ensemble, aucune synthèse globale ne lui ayant été consacrée et de nombreuses zones d'ombre subsistant.

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[71] Mentionnée notamment par Jean 2001 : 170.

[72] Je tiens à remercier chaleureusement le Dr. J. Seeher pour cette information communiquée le 4 avril 2012. Il m'indique également que l'objet en question devrait prochainement être publié dans une monographie consacrée aux découvertes de Büyükkaya, secteur où il a plus précisément été mis au jour.

[73] Smith *et al.* 1984 (P67-145, tombe 4, cimetière de l'Est de Pella), Moorey 1999[2]: 288 et Rapp 2009[2] : 166, avec 0,9 % de carbone.

[74] On citera par exemple un trône et un sceptre royaux en « fer » (AN.BAR), offerts par l'« homme » de Purušhanda à Anitta (XVIII^e^ s. env.) ainsi que d'autres objets en fer (KBo 3.22, rev. 74-75 ; cf. Neu 1974 : 15, 36). Pour la dernière étude sur cette lettre, cf. Dercksen 2010b.

[75] Cf. notamment Jean 2001 : 168-171.

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Webographie

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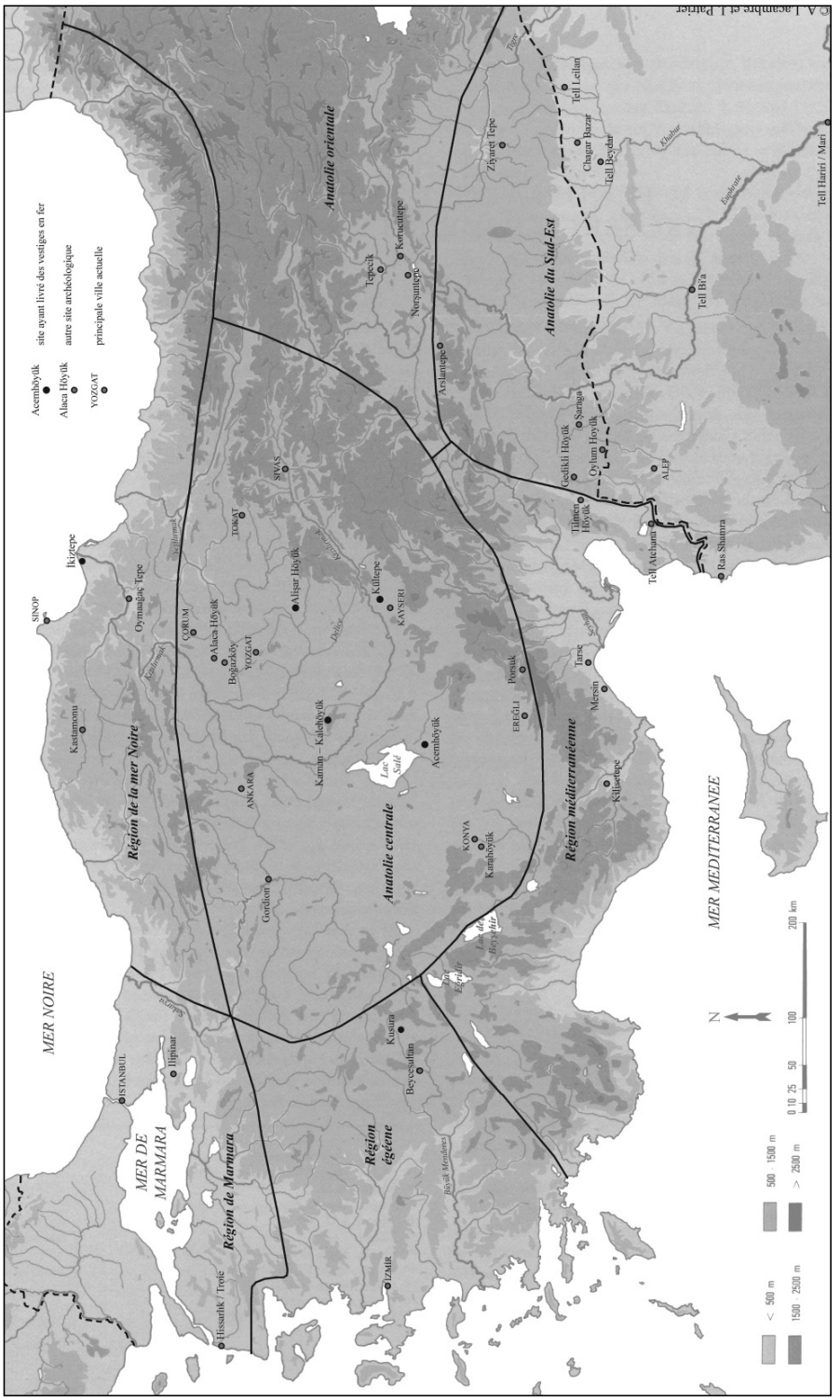
http://www.hindu.com/thehindu/holnus/001200903261611.htm
http://www.archaeology.ws/2009-3-31.htm

Site internet officiel des fouilles de Kaman-Kalehöyük (dernière consultation le 16/04/12) :
http://www.jiaa-kaman.org/en/index.html



Carte des sites du IIe millénaire av. J.-C. ayant livré des vestiges en fer (Fond de carte réalisé d'après Parzinger, H. et R. Sanz, 1992 – Die Oberstadt von Ḫattuša. Hethitische Keramik aus dem Zentralen Tempelviertel. Funde aus den Grabungen 1982-1987, Boğazköy-Ḫattuša XV, Ergebnisse der Ausgrabungen, 92. Berlin : Mann Verlag).

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CASTING TECHNOLOGIES AND CULTURAL CONNECTIONS AT AN EGYPTIAN HARBOUR TOWN

*Sanda S. Heinz**

Abstract

Lead and bronze finds dominate the statuette assemblage at Thonis-Heracleion, an Egyptian port of the Late and Ptolemaic Periods. In this article, I extrapolate the types of casting methods used for statuette production at Thonis-Heracleion based on detailed examinations of the figures in the field. The bronze statuettes and amulets provide new insights on the topic of Egyptian bronze casting, as the methods are still debated. I evaluate the possible use of the indirect lost wax method and issues of quality and mass production for bronze figures. The lead statuettes and amulets, alternatively, open a new discussion about lead casting in Egypt, as the lead statuettes have few parallels outside of Thonis-Heracleion and lead casting has never been discussed in detail with respect to Egyptian statuettes. The lead statuettes include replicated figures across several different iconographic types, and these figures were cast using open and bivalve refractory moulds. The hollow lead figures were probably created with the lead slush technique.

This discussion of casting techniques as a whole targets not only the methods used for lead and bronze casting in Egypt, but also the social implications behind these techniques, such as how and with whom specific technologies were exchanged. Replication of bronze and lead figures was common among other cultures in the Late Period and earlier, in Greece and in the Eastern Mediterranean, and contact with these cultures may have contributed to the development of replication methods in Egypt for bronze and lead casting.

Introduction

The city of Thonis-Heracleion is an Egyptian harbour town that flourished between the seventh and second centuries BC.[1] It has a complex topography with multiple landmasses intermeshed with canals that acted as the city's main thoroughfares.[2] Thonis-Heracleion met a cataclysmic end by the eighth c. AD, when much of the Canopic peninsula sank as

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[1] Thonis-Heracleion monographs, theses, and catalogues: Goddio 2007; Stanley and Bandelli 2007; Stolz 2007; Goddio and Fabre 2008; Robinson 2008; von Bomhard 2008; Thiers 2009; Libonati 2010; von Bomhard 2012; Heinz forthcoming; van der Wilt forthcoming. In-depth articles: Fabre and Goddio 2012; Grataloup 2012; Heinz 2011; Meadows 2011; van der Wilt 2010; and articles in Robinson and Wilson 2010, 2011.

[2] Goddio and Fabre 2008, 45. Depth: Stanley and Bandelli 2007, 47.

the result of heavy flooding or earthquakes; the site is now 5-6m underwater.[3] Intensive survey and underwater excavations by the Institut Européen d'Archéologie Sous-Marine (IEASM) began in 2000 after the team discovered Thonis-Heracleion and its neighbouring city East Canopus. The site's current position underwater and its topography in antiquity created ideal conditions for the survival of metals. Some looting may have occurred during the site's history, but much of the metal on land and anything in the canals was preserved from reuse in antiquity, and the site's current location several kilometres off the Egyptian coastline has inhibited more modern looting.[4]

Among its finds, Thonis-Heracleion has over three hundred statuettes and amulets; 85% of those are lead or bronze. The bronzes are mostly Egyptian style, while the lead figures encompass Egyptian, Greek, and Ptolemaic styles.[5] Figure 1 shows the distribution of the statuettes and amulets across the site, both in the canals and on land. Below, I first outline the casting processes that were frequently used in antiquity. I then look first at the bronzes and then the lead figures and explain the methods used for each. Finally, I place these technologies in the wider cultural context.

THE CASTING PROCESS[6]

Before evaluating the casting methods used for the Thonis-Heracleion figures, it is important to first give an overview of the casting processes in antiquity and the various choices that artisans had for creating statuettes. In Ancient Egypt, there were three common ways to make a metal statuette.[7] The first was to hammer sheets of metal around a wooden core. Statuettes thus created are known to Classical archaeologists as *sphyrelata*, but these are not common in Egypt and are not present at Thonis-Heracleion.[8] The remaining methods

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3 For an account of the excavated zones up to 2005, see Goddio 2007, 69-130. For an artist's rendering of the site, see Goddio and Fabre 2008, 46.

4 Goddio 2007, 77; Robinson 2008, 32; Cox 2008, 264.

5 For the assemblage as a whole, see Heinz forthcoming. For an overview of the lead figures, see Heinz 2011. Several of the bronzes and some lead figures were preliminarily published in Goddio and Fabre 2008, 316-323, 338-340, nos. 167-206, 208-209, 211-212, 319-333, 345. For an overview and analysis of the exhibition bronzes, see Weiß 2012, 395-397.

6 The following discussion is a summary of sources for the lost wax technique and Egyptian metalworking practices: see Scheel 1989 and Ogden 2000 for Egyptian metals, including ore sources and manufacture; outdated but still comprehensive: Garland and Bannister 1927. Copper alloy casting: Garland and Bannister 1927, 34-84; Brown 1976; Mattusch 1988, 10-30; Scheel 1989, 40-43; Ogden 2000, 155-161. Secondarily: Hill 2001, 202-204; Hill 2004, 2; Mendoza 2008, 9-14. Haynes 1992 provides a detailed analysis with an emphasis on Greek figures, including production and post-production techniques; see Lahusen and Formigli 2001 for Roman bronzes. See Cavanagh 1990 for casting in general, with modern working parallels; Hunt 1980 for a comparative study spanning 5000 years of history and several continents; Goldmann 1985 for prehistoric central Europe. For ancient sources for bronze casting, see Zimmer 1985; Haynes 1992, in relation to the development of piece moulding; Lahusen and Formigli 2001, 13-16.

7 For a time, sand box casting was considered an option, at least for Greek bronzes, but the idea has been largely discredited. Mattusch 1988, 22-30 provides a summary of the debate. See also Lahusen and Formigli 2001, 449-451.

8 For Greek *sphyrelata*, evidence and technique, see Haynes 1992, 11-23.

are the refractory mould method and the lost wax method. In refractory mould casting, metal is directly cast into a mould capable of withstanding high temperatures.[9]

The lost wax technique, or *cire perdue* casting, is the third method and is a technique still used in foundries.[10] It was the most common technique for bronze statuettes and is the most complex method of the three available. Lost wax casting may have begun in Egypt as early as the Old Kingdom. Eventually it displaced hammering for many purposes, and hollow-cast examples arose in the Middle Kingdom.[11] This technique is called the lost wax technique because during the process a wax model is melted or "lost," leaving a perfectly moulded cavity into which molten metal is poured. Two lost wax methods exist: the direct and indirect methods. With both, the sculptor can create hollow or solid-cast statuary.

The simplest lost wax method is the direct method, which in its most basic form consists of five steps: (1) the artist makes a wax model; (2) he coats the wax figure in clay; (3) he fires the figure, the clay hardens into a solid mould, and the wax melts out; (4) he pours molten metal into the mould's cavity and allows the metal to cool; (5) and he then removes the mould and cleans and polishes the bronze. The most important aspect of the direct method, for this discussion, is that each figure is unique. When casting is complete, the metal worker breaks the mould to retrieve the bronze within. This method is also called the investment method, because this ceramic layer is lost, or invested, in the making of the piece.[12] The original wax model and the clay mould are destroyed in the process, thus leaving no way to replicate the piece.

The indirect method, in contrast, allows for the production of a series of more or less identical solid or hollow-cast figures. The primary difference between the direct and indirect methods is one extra step at the beginning of the process in which the artist creates an extra mould. After creating the wax model, the artist moulds clay around it. He then removes the mould without breaking it, usually by fashioning it in two or more pieces, and fires it. He can then pour heated wax into that mould to create more identical wax figures. From there, each wax figure is casted according to the direct method, as described above. In principle the difference between the two processes is basic but important: with the indirect method, both the original mould and the original model are preserved, allowing for replication. For refractory and indirect lost wax techniques, there are three types of moulds: open moulds, bivalve moulds, and piece moulds.[13]

[9] Ogden 2000, 157. Denys Haynes (1992, 30), with reference to Greek techniques, uses the term refractory to designate specifically loam or sand/clay mixtures; here I use the term to refer to any type of durable mould material including clay, stone, plaster, or even metal.

[10] Foundry debris is rare; without physical examples, it is difficult to imagine what the mould and the bronzes looked like as this process progressed. Cavanagh (1990) provides useful photos of the modern process; see also Mattusch 1988, 15-22. Several online videos show the process in modern foundries; for example, for the first 3 minutes, 30 seconds: AP Casting. "How to Make Bronze Sculptures — Lost Wax Bronze Casting." Theapgallery. http://www.youtube.com/watch?v=gVe3VeQfyzw&feature=related (uploaded October 13, 2008); multiple videos highlighting each stage: Expert Village http://www.youtube.com/watch?v=-ScNxwqXkxY (related links to the other videos on the right side). All of these videos concern the indirect method.

[11] Ogden 2000, 158. For a basic timeline: Ziegler 1996, 29-30, with specific pieces listed; Hill 2001, 204-207.

[12] For the term "investment" see Cavanagh 1990, 150-151.

[13] Open mould: Ogden 2000, 157. Piece mould: Haynes 1992, 42-53 (fig. 3 for an illustration).

BRONZE CASTING AT THONIS-HERACLEION[14]

Framing the Wider Debate

The bronze statuettes at Thonis-Heracleion are representative of many similar votive statuettes throughout Egypt. These Egyptian bronze statuettes usually represent deities in anthropomorphic, hybrid, or theriomorphic forms.[15] Bronze votive statuettes were frequently buried after use, with the result that many survived looting in antiquity and in modern times.[16] Though thousands of bronze statuettes and figurines like those at Thonis-Heracleion stand on display in museums across the world, there is still debate over the methods by which they were produced. The material from Thonis-Heracleion, however, provides new information in this regard. In particular, the material points to the practice of replicable production; in other words, methods that allow for the production of identical figures, an idea that scholars have alternately accepted and rejected with respect to Egyptian bronze casting.

The earliest comprehensive works on Egyptian bronzes are Günther Roeder's publications from 1937 and 1956. Large portions of these, as well as earlier articles by Roeder, were dedicated to the technical processes used to make bronzes. He proposed that Egyptian bronzes were mass-produced through the indirect method, using moulds to produce wax replicas for casting.[17] He took this even further, stating that many wax figures were assembled from pre-moulded parts. For example, separate moulds existed for multiple portions of the figure (the head, the crown, the upper body, the lower body, the arms and the legs).[18] Using the moulded parts on hand, figures were assembled in wax according to the subject desired and then cast, taking mass production to the extreme.

Maarten Raven published preliminary results for his study of the 700 figured bronzes in the Leiden collection. He supports Roeder's opinions, but without providing visual confirmation through pictures or drawings, presumably because these were to be included in the final publication.[19] Roeder's assembly process appears evident to Raven because many of the Leiden figures have "protruding or lopsided joins between the original model parts, attributes or limbs of the wrong dimensions, protrusions resulting from superfluous wax, or casting-ducts removed incompletely or not at all." According to Raven, these were all signs of "shoddy workmanship and mass production."[20] Michel Wuttmann, in preliminary

[14] In technical studies, the term copper alloy is frequently used instead of bronze, as bronze refers to a specific combination of copper and tin (see, for example, Craddock 1977; Ogden 2000). Throughout this work, the term bronze is retained in part for its familiarity, and in part because the majority of Egyptian cast statuettes contemporary with those from Thonis-Heracleion, when tested, prove to be leaded bronzes (Riederer 1981, with bibliography).

[15] The most comprehensive resources on Egyptian bronze votive statuettes include Roeder 1937, 1956; Hill 2001, 2004, 2007; Aubert and Aubert 2001; Mendoza 2008; and Weiß 2012.

[16] Hill 2001, 203.

[17] Roeder 1933a; 1933b; 1937, 187-251; 1956, 515-549.

[18] Roeder 1933a; 1933b, 228-238; 1937, 144-187; 1956, 520-525.

[19] Raven 1992.

[20] Raven 1992, 531.

articles about several hundred bronze Osiris figures from ʻAyn Manâwir, suggests that most were made in either mono or bivalve moulds, but he does not provide further explanation or visual proofs.[21]

Other scholars have expressed opposition to Roeder's views. Deborah Schorsch has conducted detailed technical examinations of numerous Egyptian statuettes, often to determine their authenticity for museums.[22] In her 1988 article, she states that there are no ancient identical statuettes from Egypt because the direct lost wax method used to cast these bronzes does not allow for duplicates or copies to be made. She even notes that in cases where a piece was already considered a modern fake, the fact that a duplicate existed was considered the definitive evidence.[23] In 2007 Schorsch states that mould lines on a figure would prove that the indirect method was used, but that the mould lines described by Roeder were often different features that he confused with mould lines.[24] She does allow, however, that replicas were perhaps created in the Ptolemaic period and that this may reflect a change in foundry practices at this period, which may have included the indirect method.[25]

In 1998, John Taylor, Paul Craddock, and Fleur Shearman wrote about the production of hollow-cast bronzes from Karnak at the beginning of the first millennium BC.[26] Based upon their examinations, they also concluded that the Egyptians never used the indirect method and that all Egyptian statuettes are essentially unique.[27] They examined six figures at the British Museum: three female figures, two Osiris figures, and one male figure.[28] Both Schorsch's study and Taylor, Craddock, and Shearman's study rule out the use of refractory moulds as well as the indirect lost wax method for bronze statuette production, as both methods are capable of producing identical statuettes. Other scholars either accept Roeder's or Schorsch's positions, or hesitate to commit to either without more definitive proof.[29]

The Bronze Statuettes: Production Methods

Pinpointing a location for lead and bronze production at Thonis-Heracleion is difficult. Some bronze waste and lead slag have been discovered, but the chunks are scattered across the site with no particular concentrations in any one area. Small fragments of lead are ubiquitous, particularly in the canals and waterways, but significant casting-related concentrations have not been firmly identified. A few statuettes, bronze and lead, are heavily damaged and may be casting wasters, but again they do not indicate any particular

[21] Wuttmann *et al.* 1996, 433; Wuttmann, Coulon, and Gombert 2007, 168.

[22] Schorsch 1988; Schorsch and Frantz 1998.

[23] Schorsch 1988, 42.

[24] Schorsch 2007, 192.

[25] Schorsch 2007, 192, referring to four Ptolemaic statuettes (nos. 52-55; figs. 82-85).

[26] Taylor, Craddock, and Shearman 1998.

[27] Taylor, Craddock, and Shearman 1998, 12.

[28] Taylor, Craddock, and Shearman 1998, 9.

[29] Ogden makes little mention of the idea of assembling figures from several wax pieces, but he does lend credence to the overall idea of indirect casting (2000, 157). Weiß (2012, 15) cites Schorsch's arguments. Hill (2001, 204) and Mendoza (2008, 12) reserve judgment.

zone on site that may have housed production.[30] Nevertheless, the statuettes themselves provide useful information about production techniques, whether that production occurred in Thonis-Heracleion or in a nearby city.

Thus far, the excavators have not discovered any bronze figures that are identical. Nevertheless, it does seem that the indirect lost wax method was in use at the site and some figures were replicated. The most compelling evidence for this hypothesis is a casting mould that was discovered in 2004. The mould is a flat, ovular piece of lead, 1.3cm thick and 11.9cm wide (H9099, Figures 2-3). It was found near the entrance of the North Canal, east of the rectangular island in the East Passage. The stratigraphy near the island is complex and the excavation director has proposed that the general area may reflect erosional activity, possibly a landslide, from the island. This area has potential as a production centre; the mould was not far from a bronze cubic coin die, which also may have originated from the island, although few other signs of production are apparent. This particular archaeological context is pictured and discussed in more detail in an article about the coin die and its significance.[31] Ceramic finds in the zone place the coin die and the lead mould in the fifth-fourth centuries BC, although finds from more recent excavations suggest that the area may have supported a less dominant Ptolemaic phase as well.[32]

Several indentations are on the front and back of the mould. Impressions were taken from all of the indentations and were recorded in sketches and photographs. Five indentations are on the front, one of which is easily identifiable; three indentations are on the back, two of which are identifiable. The three identifiable indentations represent spiral ram horns that would have decorated the lower portion of an *atef* or *hemhem* crown. Although the front horn is obscured to some degree by marine matter, all three preserve diagonal striations comparable to other cast spiral ram horns. Similar, but not identical, bronze cast pieces have been found at Thonis-Heracleion.[33]

The designs on the mould are particularly important for understanding its function. The ram horns are typical attachments for crowns of bronze figures, particularly Osiris with the *atef* crown, or child deities when they wear *hemhem* crowns.[34] Since the mould is a lead mould, however, the pieces could not have been cast using the refractory method; if bronze were poured directly on the mould, the molten bronze, with its higher melting point, would melt and destroy the lead mould. The most probable scenario is that the mould produced wax ram horns. These wax horns could be replicated and attached to the main figure in wax before casting, as Roeder suggests. Alternatively, they could be replicated, cast individually, and then attached mechanically to a figure after casting. In either case,

[30] H3163, H8167, H8187.

[31] Meadows 2011, 97-99.

[32] Goddio in Meadows 2011, 98, fn. 5. Grataloup 2010, area C, 153-154, for the ceramic dating of the East Passage.

[33] Published examples include Goddio and Fabre 2008, 322, nos. 202, 204, 205 for an individually cast example and examples on crown attachments. See also Heinz forthcoming for H8126, which is the most appropriate comparison in terms of size and casting method.

[34] *Atef*: Weiß 2012, types 85-86, 175-177. *Hemhem*: Weiß 2012, types 57-60, 145-148.

the mould produced replicable wax figures intended for bronze lost wax casting according to the indirect method.

Even if this lead mould could be used to cast lead attachments instead of waxes, as some bronze moulds may have casted bronze items, these horns do not match the iconographic types for which lead was generally used at Thonis-Heracleion. No lead examples of spiral ram horns are known, while bronze examples are abundant. None of the Osiris figures from the site are made of lead and none of the lead child deities represent a type that wears a Pharaonic style *hemhem* crown.[35] The horns are also large for the lead figures at Thonis-Heracleion, which are small-scale, portable, and are cast in one piece without attachments. For similar reasons (incorrect size and iconographic type), the impressions on the mould would not be used for faience manufacture. The most viable conclusion is that the mould produced waxes for bronze figures.

Other expressions of the indirect lost wax method at Thonis-Heracleion may be visible among the bronze Osiris statuettes. After child deities, Osiris is the most popular iconographic type at Thonis-Heracleion with twenty examples, not including crown fragments. Several of these figures group around a similar height range, between 7.5-9.5cm (see Figure 4). Wuttmann noted a similar size range in a sample of the bronze Osiris statuettes at ʻAyn Manâwir; those figures ranged between 7-9cm, with the smallest at 6cm.[36] Carol Mattusch cites examples of Greek statuettes and statuary that were casted with the indirect method. She notes that the indirect lost wax method could be used to create basic wax models for statues, statuettes, fittings, and other bronze items. From there the artisan could carve and individualise the figures as needed.[37] The indirect method, if used in this manner, might explain why Osiris statuettes at Thonis-Heracleion, and elsewhere in Egypt, are so frequently similar in size but are not uniform in appearance. This method would produce statuettes that represent a balance between Roeder's and Schorsch's views – ones that are created efficiently from pre-formed wax models, but which are still crafted with care and are not identical.

Thus, the Thonis-Heracleion material requires that we at least consider the possibility that the indirect method was used for bronze casting in Egypt. But if it was used with any frequency to create identical pieces, why are duplicates so rare in museum settings, as Schorsch and others have noted? First, signs of duplication, such as mould lines, were probably rare on bronzes even in antiquity, as these signs could be easily erased in wax models. Past museum purchasing patterns may also be partly to blame. Dealers regularly split statuette groups to sell the constituent parts separately for increased profit. Few votive groups survive intact, even though many figures were designed as part of votive groups rather than as single figures.[38] For example, in Karnak in 1902-1903 an enormous

[35] Heinz 2011.

[36] Wuttmann *et al.* 1996, 431.

[37] Mattusch 1990.

[38] Groups: Roeder 1956, 487-515, §659-690; Hill 2004, 113. Many groups were probably dismantled in antiquity for ritual reasons as Hill suggests (2004, 130-131), as few intact groups have been found even in excavated settings, but some may also have been separated after they were discovered for profit.

cache of 17,000 bronzes was uncovered in the great court between the southern wall of the Hypostyle Hall and the seventh pylon.[39] The Cairo Museum, because of the glut of material, sold the 'duplicates'.[40] Whether these were actual duplicates or just objects of the same iconographic type, or both, is unclear but the situation illustrates the general principle.

The subject matter of more recent major studies also reduces the chances that duplicate objects will be found and studied. For example, Marsha Hill and Barbara Mendoza examined statuettes of pharaohs and priests, respectively.[41] While both of these studies included generic representations of kings and priests, these are categories that represent prestigious members of society and the statuettes are often of exceptionally high quality. Taylor, Craddock, and Shearman examined six figures and although these figures may be from one site (Karnak), they are a minute fraction of the bronzes from Karnak.[42] They are also some of the largest and earliest extant hollow-cast pieces and they represent very prestigious members of society or prestigious gifts. Other studies have focused on the Third Intermediate Period, which represents the peak of quality for bronze statuettes, when figures were inlaid with costly materials and were even specially patinated.[43] In other words, even if replication was regularly practiced when these figures were crafted, the subjects of these studies are some of the statuettes least likely to be mass-produced or replicated.

The best potential sources for replicated figures are large, well-provenanced, excavated collections, like those at Saqqara and 'Ayn Manâwir, where the assemblages include dozens or hundreds of similar iconographic types (far more than Thonis-Heracleion may claim).[44] Within those collections, the figures most likely to have mould lines or otherwise display signs of indirect casting would be the more generic, cheaper, smaller figures – precisely those that generally hold less interest for museums and scholars.

The question still remains, however, how much the indirect lost wax method was used and to what extent that method contributed to mass production. Several of the statuettes from Thonis-Heracleion have been pieced together from multiple components. Such piecing is an important aspect of the mass production model that Roeder envisioned. At Thonis-Heracleion, however, the piecing does not appear as extensive as Roeder proposed and was not done so quickly or in such a rote manner that it promoted sloppy workmanship, as Raven suggests for the Leiden figures.

The piecing instead seems most common between two major components, for instance between a figure and its base or between a primary figure (like Isis) and a secondary figure (*Har-pa-khered*). On two Isis *lactans* (H6901 and H10145), the join between Isis'

[39] For an account of the find: Legrain 1906, 12; Young 1967, 274-275, 282; Taylor, Craddock, and Shearman 1998, 14. A recent online cataloguing project has also been initiated for the Karnak material, although thus far the focus is on large statuary: http://www.ifao.egnet.net/bases/cachette.

[40] Young 1967, 275.

[41] Hill 2004; Mendoza 2008.

[42] Taylor, Craddock, and Shearman 1998.

[43] Ziegler 1987; Vassilika 1997; Bianchi 1990.

[44] Davies 2007 (Saqqara); Wuttmann, Coulon, and Gombert 2007 ('Ayn Manâwir).

lap and the child deity is clearly visible.[45] In both cases, *Har-pa-khered* is not mechanically joined post-casting with a tenon but is sealed into place. On a statuette of a striding ibis on a standard (H8557, Figure 5), the ovular plinth that supports the ibis was slotted into the top of the standard. The plinth and standard are now completely fused. It is probable that when the ovular support for the ibis figure was still a wax model, it was slotted into the wax standard. The two constituent parts fused during casting.

An alternative possibility is that the constituent parts of the Isis *lactans* and the ibis were 'casted on' rather than joined in wax.[46] In this method, the Isis would be cast in bronze first, then a wax *Har-pa-khered* would be attached to Isis, and the area would then be invested with clay and cast, thus fusing the metal of both figures. As Ogden notes, it is very difficult to determine on appearance alone whether something was casted on or whether two components were joined in wax, so it is an alternative possibility.[47] For at least one figure at Thonis-Heracleion, however, it seems more likely that its body and base were joined in wax and were not casted on. A seated cat (H11026, Figure 6) has a buffering layer of metal between the paws and the base. If the cat and base were cast separately and then joined, the cat would sit directly on the base, attached by a tenon below its rump.[48] The buffering layer makes more sense if the figures were joined first in wax and then cast. To attach the wax cat to the wax base, an intermediate layer of heated or roughened wax would help the two pieces stick together, much as the surface of a bronze is roughened before it is gilded so that the gypsum and gold are better retained.[49] Once the piece was cast, the intermediate wax layer was preserved as metal. Casting on would leave a tighter seam.

Other items that commonly were modelled separately were bronze crown attachments; many were also cast separately and were mechanically attached to the statuette post-casting, rather than being added in wax before casting.[50] For instance, Isis H6901 had a separately cast crown; the crown is not extant, but the hole at the top of the modius shows where it would have been inserted. Numerous crown fragments with tenons at Thonis-Heracleion have also survived; these would have been attached either to bronze statuettes or wood-and-bronze mixed media figures.[51]

Piecing does not presuppose indirect casting and replication. Roeder combined the two concepts by suggesting different parts of statuettes were replicated and then combined in an assembly line fashion in wax, but a figure does not need to be replicated before it can be pieced together; original carved models (of the body and crown, for instance) can also be pieced together in wax, casted on, or added mechanically after casting. What piecing does

[45] These figures are more fully described and presented in Heinz forthcoming, as are other previously unpublished bronze and lead statuettes and amulets mentioned in this article.

[46] 'Casting on' for Egyptian figures: Ogden 2000, 159.

[47] Ogden 2000, 159.

[48] H9726 is an example of a seated cat that would have sat directly upon the base, attached by tenons.

[49] Intermediary wax layers: Ogden 2000, 159. Roughening the surface for gilding: Oddy *et al.* 1990, 103-104.

[50] Mechanical joins for Egyptian figures: Ogden 2000, 158-159.

[51] See 'crown elements' in Heinz forthcoming. For similar types of attachments for the *atef* crown, see Roeder 1956, taf. 25d, e, g.

show is that the process of casting was broken down into multiple components that would make mass manufacture easier. But it does not seem that the process was broken down as minutely as Roeder described – that for every statuette, the head, torso, arms, crowns, and legs were all initially moulded as separate pieces.[52] One arm fragment at Thonis-Heracleion has a tenon at the shoulder joint, which shows that it was mechanically added to a statuette post-casting, but at this site, added features are generally crown elements, bases, and secondary figures.[53] Moulds, if figures were regularly cast using the indirect method, probably would have represented the figure's full form. In other words, there might have been a Sekhmet mould, an Osiris mould, a child deity mould, and so on, rather than, for example, a female torso mould, a male *shendyt* kilt mould, a leg mould, and an arm mould.[54]

Quality is a difficult issue to assess at Thonis-Heracleion because so many of the statuettes are heavily corroded from underwater exposure to marine concretions. What can be said is that the Thonis-Heracleion figures are not of the same quality as some Third Intermediate bronzes, the types that are well known for exquisite inlay, gilding, and even special patination.[55] While some of the figures at Thonis-Heracleion do retain signs of inlay and gilding, these enhancements do not characterize the group.[56] At the same time, unlike the Leiden pieces, the Thonis-Heracleion figures are not characterized by lopsided joins or mis-proportioned limbs. Some casting mistakes are notable on the lead figures from the site,[57] but there are few mistakes on the bronzes that could be attributed to sloppy craftsmanship as a result of intensive mass manufacture and replication.

Overall, the evidence from Thonis-Heracleion mediates between Roeder's intensive mass-manufacture model and Schorsch's more reductionist model where each figure is a unique product. The lead mould demonstrates that the indirect lost wax method likely was used in Egypt for the some production, possibly as early as the fourth or fifth centuries BC, although the extent to which this method was used is unknown and unbounded. The practice of piecing at Thonis-Heracleion demonstrates that the casting process was broken down into multiple steps that could make mass manufacture easier, but probably not to the extent Roeder proposed and not, at this site, to the extent that craftsmanship became sloppy and unreliable.

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[52] Roeder 1933a; 1933b, 228-238; 1937, 144-187; 1956, 520-525.

[53] Arm piecing for Classical figures: Kent Hill 1982.

[54] See, for example, moulds from Memphis from the Ptolemaic and Roman Periods: Roeder 1933b, 230; Roeder 1937, pls. 43-44; see Edgar 1903, xi, xvi for further moulds. Dating: Roeder 1933b, 230; Edgar 1903, vii-viii. Roeder dismisses these as unrepresentative of the Pharaonic Period, because they date to the Ptolemaic and Roman periods, and because they do not show evidence for extensive piecing. Neither are reasons to exclude them here, if we can posit a more fluid transition between the Late and Ptolemaic Periods.

[55] Inlay on Third Intermediate Figures: Taylor, Craddock, and Shearman 1998, 10; Hill 2007. Patination: Haynes 1992, 114-116; La Niece and Craddock 1993; Hill and Schorsch 1997, 13-14; Ogden 2000, 160; La Niece *et al.* 2002; Delange 2008.

[56] For bronzes with traces of inlay at Thonis-Heracleion, see Goddio and Fabre 2008, 322-323, no. 201, 204, 212.

[57] Several of the lead falcons have chips, or holes, in their wings, on the right and left sides. They occur on different figures, not just mould siblings, and thus the flaw probably cannot be attributed to the mould itself. The feature is so frequent, however, that it is likely attributable to the casting process in some way. See Heinz forthcoming for further information on this feature and other lead casting flaws.

The Lead Statuettes and Amulets: Production Methods

Unlike the bronze figures, the lead statuettes and amulets have few parallels. Lead finds from Egypt are rare, or are not published or displayed; for that reason, lead casting processes are not much discussed.[58] Before 2011, only one article, by Marie-Françoise Boussac and Merwatte Seif el-Din, records and discusses Egyptian lead figurines from Egypt in detail; the article presents the lead figurines from the Graeco-Roman Museum and it is the main source of parallels for several of the Thonis-Heracleion figures discussed below.[59] The greatest amount of literature regarding lead use and lead casting in antiquity, aside from the separate issue of lead isotope analysis, revolves around artefacts from the Roman Period, and most of it concentrates on more utilitarian items such as piping or ingots.[60] Thonis-Heracleion, however, has over 1,000 lead objects and around one hundred of those are lead statuettes and amulets. Thus the Thonis-Heracleion material presents the opportunity to open a new discussion on lead casting in Egypt in the Late and Ptolemaic Periods. This article focuses on the statuettes and amulets, but some other categories of material are mentioned where appropriate.

Signs of casting processes are more readily identifiable for the lead figures than the bronze figures. Replication, for instance, is common and two types of evidence confirm the use of replication processes: mould lines and identical figures (mould siblings).[61] Several different lead iconographic types at Thonis-Heracleion have mould lines and mould siblings: falcon amulets, elephant figurines, horse figurines, and Ptolemaic-style child deities.[62] The elephants, horses, and child deities all date to the early Ptolemaic Period, while the falcon amulets derive from fifth-second century zones, with at least one in a sixth-fourth century context.[63] The mould lines are raised lines that bisect the figures, running up the chest over the crest of the head, and down the spine.

The amulets represent falcons wearing the double crown of Egypt; they are all very small, solid cast, and under 3cm. Eight of the eighteen falcons have mould lines, and in the group there are two sets of identical figures, with three examples each.[64] The horses, elephants and child deities are also small-scale, ranging in height from 2.8 to 4.2cm. They

[58] Recent work has been done by van der Wilt for the lead objects from Thonis-Heracleion, with the exception of the figurines: van der Wilt 2010; this volume; and forthcoming. See van der Wilt forthcoming for an in-depth discussion on lead finds in Egypt and possible reasons for their scarcity outside of Thonis-Heracleion. For the scarcity of lead ore in Egypt, see Ogden 2000, 168-9. For a compilation of known lead artifacts from Egypt, see Lucas and Harris 1962, 244.

[59] Boussac and Seif el-Din 2009.

[60] For example, Tylecote 1962; 2002, 72-73; Boulakia 1972.

[61] See Schorsch 2007, 192 for the significance of mould lines, as noted above in 'Framing the Wider Debate."

[62] For stylistic dating and further iconographic information for these figures, see Heinz 2011, 214-217.

[63] Many of the falcons derive from the main temple area and one particular area in the Grand Canal; see Grataloup 2010, areas D-F, 154-156, for ceramic dating for the temple and Grand Canal. The last falcon comes from a sanctuary zone in the north of the site (G1). See Goddio 2007, 120 for G1. The child deities, elephants, and horses are concentrated on the central landmass to the east of the main temple, and also in parts of the Central Port. For the chronology of the zone east of the temple, see Grataloup 2010, area G, 156.

[64] Falcons with mould lines: H5578, H10718, H1461, H4587, H1465, H10734, H12212, H12132. Identical falcons: group 1 – H10734, H5578, H10718; group 2 – H1465, H3545, H1493. Figure H3470, may also belong to the second group, although it is heavily damaged.

are hollow-cast with a rectangular open bottom edge. Three of the fourteen elephants have mould lines, as do three of the eight leaping horse and one child deity.[65] Some other figurines from the site that do not belong to these particular groups also have mould lines: a lead figure of Bes with raised lines running vertically down its sides (H9646) and several lead miniature vessels.[66]

At least three horses have enough detail preserved to show that the figures are identical and are from the same mould, although the state of preservation varies: H11402, (3.7×3.2cm, 24.9g), H11485 (3.7×3.4cm, 23.4g), and H11644 (3.5×3.0cm, 19.6g). The remaining figures that represent horses with riders are also remarkably similar to one another. At least two of the best-preserved elephant statuettes at Thonis-Heracleion exhibit identical detail, down to the design of the saddle blanket: H8578 (4.2×3.7cm, 23.2g) and H11788 (3.55×3.6cm, 9.7g).[67] Two others have traces of this detail but are less well preserved (H8578 and H9602). Of the nine lead child deities, four are probably mould siblings: H8811 (4.4x3.4cm, 39.1g), H6945 (4.0x3.2cm, 41.9g), H9940 (4.8x3.7cm, 40.1g), and H9481 (4.9x3.2cm, 41.38g). Figures 7-9 provide examples of identical falcons, elephants, and horses.

These figures were probably cast using refractory moulds. Lost wax casting would have been cost-prohibitive as the beeswax was relatively expensive, and with lead's lower melting point refractory methods were sufficient for small figures such as these.[68] Edgar, in his study of the Greek moulds from Memphis, noted that the plaster moulds might not have withstood the heat of bronze casting over multiple uses and suggested that they would have been used to produce waxes.[69] Because the melting point of lead is lower than bronze, 327 ºC versus 960-1,083 ºC, a refractory bivalve mould would have lasted longer with lead than with bronze figures.[70] Haynes noted that one of the main differences between pieces cast with refractory methods and those cast in the indirect lost wax method is that figures cast directly into moulds without the intermediary wax step would be more likely to have mould lines, like the figures described above.[71] On wax figures, mould lines are easily removed. The use of the refractory method explains why so many of the lead falcons, elephants, and horses retain mould lines.

Although the Thonis-Heracleion finds have few parallels in Egypt, two regions in the Mediterranean, Laconia and Anatolia, have produced large, pre-Roman assemblages of lead figurines. These assemblages are iconographically different than the Thonis-Heracleion figures, but provide valuable comparisons for the use of lead and for casting techniques.

[65] Elephants with mould lines: H9630, 9602, 11726; horses with mould lines: H9695, H11402, H11644. Child deity with mould line: H6302. Further examples have faint lines that may be mould lines; only those that are secure are provided.

[66] For the miniature vessels, see van der Wilt forthcoming.

[67] A similar blanket detail is described on three of the Graeco-Roman Museum pieces, but whether the blanket is identical is not possible to determine from the photos: Boussac and Seif el-Din 2009, 226, nos. 20-22; 251, figs. 19-21. Nearly the entire left side of H11788, and most of the solid rider, are missing, which account for the weight difference between it and H8578.

[68] Beeswax: Serpico and White 2000, 409-411.

[69] Edgar 1903, viii. The Memphis moulds also retain no traces of metal.

[70] Melting points: Mattusch 1988, 13-14.

[71] Haynes 1992, 55.

The figures from Laconia are best known from the Sanctuary of Artemis Orthia and from the Menelaion in Sparta.[72] Several thousand have been found and range in date from the seventh-sixth centuries BC. The Anatolian material is older, from last quarter of the second millennium, and is best known from Alishar and Kültepe.[73] In both regions, the figures were cast in open moulds; they had flat backs and decorated fronts; several moulds have also been found.[74] Like the figures from Laconia and Anatolia, a few statuettes at Thonis-Heracleion were cast in open moulds: for example, a lead offering bearer (H3043) and one unidentified lead anthropomorphic figure (H9976). Three lead ingots also retain layered lines on their side that show the metal was poured into an open mould (H5944, H9137, and H10000).[75]

The majority of the Thonis-Heracleion figures, however, were moulded in a bivalve mould, as noted previously. The falcons are solid cast and the lead would have been poured directly into the mould to cool and set. The horses, elephants, and child deities, however are slightly more complex. I propose that these figures were made according to a technique called the 'slush' technique. This is a technique that (for antiquity studies) is more frequently discussed in relation to hollow cast bronzes from the indirect lost wax method.

With the wax slush technique, the artist fills a mould with wax and then 'slushes' the wax around to make sure it coats all parts of the mould. As the wax cools, the wax in direct contact with the mould solidifies first and builds up. Before all of the wax cools, the artists up-ends the mould and pours out the molten wax. When the mould is removed, the result is a wax figure with thin, even edges and a hollow interior.[76] The process could be repeated to create multiple, identical hollow waxes. The best evidence for the use of the slush technique comes from the interior of large-scale statuary. Haynes pointed to the interior of a Greek large-scale hollow bronze that preserves a drip mark that was originally on the wax. He suggested that the wax shell was made using the slush method and the drip mark occurred when the molten wax was thrown out of the mould; the drip-mark was then preserved in the bronze during casting.[77] This type of evidence indicates that the slush technique was in use in antiquity.

For the Thonis-Heracleion figures, lead was used instead of wax. Lead was poured into a prefabricated mould, it was allowed to cool until the desired amount of metal solidified around the edges, and then the remaining lead was thrown out of the mould. This was a relatively easy method of casting lead statuettes, one that was common among amateur lead casters in the early twentieth century and that is still in use today.[78]

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[72] See, for example, Dawkins 1929; Cavanagh and Laxton 1984; Gill and Vickers 2001.

[73] See, for example, Emre 1971; Mitchell 1983; Marchetti 2003; and Moorey 1994, with a summary and further bibliography.

[74] See Cavanagh and Laxton 1984, in particular, for discussions on moulds and seriation.

[75] Ingots and layered lines: Whittick 1961. For ingots at Thonis-Heracleion, see van der Wilt 2010, 161-163.

[76] Cavanagh 1990, 148.

[77] Haynes 1992, 27, 35, pl. 4.

[78] For modern lead production of small figures: Rhead 1948; Horton 1976.

Overall, evidence from Thonis-Heracleion suggests that the lead figures were made in refractory moulds; both open and bivalve moulds were used, but bivalve moulds were preferred. The hollow figures were cast using the lead slush technique in a bivalve refractory mould. Replication was frequent and was not limited to one stylistic or cultural type; Egyptian, Greek, and Ptolemaic style figures alike were all serially produced. The dates for these figures, based on archaeological context and artistic style, range between the sixth and second centuries BC.

Casting and Cultural Connections

The description and evaluation of production techniques above are important, not just to know what the techniques were for the sake of knowing, but also because these details help us see how connected the Egyptians were within their own craft centres and with other cultures. Production techniques contribute to a wider narrative.

The mould at Thonis-Heracleion, and possibly the Osiris figures, suggest that the indirect lost wax method was in use in Egypt some time between the seventh and second centuries BC, which was the main period of Thonis-Heracleion's occupation; if the archaeological zones are considered, replication among the lead and bronze figures was somewhere between the fifth and second centuries BC. Schorsch contends that if replication among bronzes occurred, it was only during the Ptolemaic Period. If, however, Greek contact is seen as the necessary factor in initiating the creation of Egyptian style replication, this technology could have been introduced much earlier.

Comparisons with Greece are particularly instructive because of the close connections between Greece and Egypt and the vast amount of scholarship concerning Greek bronzes.[79] There is, however, little crossover in the scholarship when it comes to bronze production.[80] Scholars of Greek bronze production assert that statuettes were generally produced using the indirect lost wax method from the Archaic period onwards. Although Mattusch points towards a mixture of techniques (direct and indirect), the idea of replicable methods is fully accepted and necessary to her view of the importance of repetition and duplication.[81] Duplicates among Greek statuettes are also known, dating as early as the Archaic period.[82]

A direct connection between Egypt and Greece is evident in the seventh century BC at Samos, where a large number of Egyptian and Egyptian-style statuettes have been found. Samos has often been pointed out as a key meeting point between Greek and Egyptian cultures.[83] Coincidentally, this is also the location of the earliest bronze figure from Greece

[79] For comprehensive reviews with bibliography, see Mattusch 1988; Haynes 1992.

[80] In one of his articles, Roeder attempted to reconcile the stylistic effects of his assembly method with the perceived differences between the style of Greek and Egyptian bronzes (Roeder 1933b, 226-227, 243-245, 262-263).

[81] Mattusch 1990.

[82] Mattusch 1990, 132. Five identical seventh-century statuettes from Delphi: Haynes 1992, 43.

[83] For Samos: Jantzen 1972; Bianchi 1990. Egyptian statuettes abroad: Weiß 2012, 493-511. See Leahy 1988, 302-304 for the distribution of Egyptian bronzes outside Egypt, including but not restricted to Samos.

that shows clear evidence of refractory mould use. A bronze griffin protome that was a waster has three clearly delineated mould lines along the back of its neck.[84] Taylor, Craddock, and Shearman also cite the story reported by Pausanias that the first large-scale bronze casters, Rhoikos and Theodoros, were Samians who learned their craft in Egypt.[85] This literary passage does not refer to casting methods specifically, but it does suggest strongly that technological exchange with respect to bronze production occurred between Greece and Egypt as early as the Archaic Period.[86] And Samos was not the only point of contact, but rather a leading representative of a wider phenomenon.[87]

Nor is Greece the only possible source for this type of production. Early use of the indirect lost wax method is also attributed to Mesopotamia, although scholars have not debated the issue there as much as they have for Greek material.[88] One particularly complex bronze mould from Mesopotamia allows for the simultaneous casting of three arrowheads and dates to around 700 BC.[89] Early on, casting methods of other geographic regions and cultures, and mould technology in particular, were advanced. Moulds were used to create copper objects as early as the fourth millennium, though these were mostly for weapons and tools.[90] Whether craftsmen poured metal directly into these moulds or used them to produce waxes is a matter of debate, and possibly dependent on each mould.[91] The Eastern Mediterranean in general is a great potential source for mould and casting technologies. Thonis-Heracleion, the port of entry for Egypt, had intensive and wide-ranging contacts in the Eastern Mediterranean throughout its history, even from its earliest periods.[92] As noted previously, one of the best parallels for the lead figures, in terms of manufacture and quantity, were the figures from Anatolia, which were made as early as the late second millennium BC.

We must also look at other craft technologies in Egypt itself. In parallel technologies such as faience manufacture, moulds were used to replicate figures as early as the Old Kingdom.[93] By the Late Period, faience was mass-produced using these moulds.[94] It would be a mistake, I think, to see different craft technologies in Egypt as entirely separate. The evidence at Thonis-Heracleion, for instance, demonstrates irrefutably that refractory moulds

[84] Haynes 1992, 44, pl. 5.

[85] Taylor, Craddock, and Shearman 1998, 9: Pausanias 10.38.6.

[86] Such an exchange is often discussed in relation to other crafts and art forms, particularly Archaic Greek *kouroi*: (in the context of bronzes) Mattusch 1988, 45. *Kouroi* in general: Richter 1970.

[87] Winter 1971, 154-155.

[88] For Mesopotamian bronze casting, with bibliography, see Moorey 1994, 269-273; for lead in Mesopotamia, Moorey 1994, 292, 297.

[89] Coghlan 1952; Moorey 1994, 270.

[90] Bivalve casting: Hunt 1980, 72-73 (moulds and waxes in general); Garland and Bannister 1927, 55, figure 2; Ogden 2000, 157 (for Egypt); Moorey 1994, 269-270 (Mesopotamia); Garland and Bannister 1927, 55, figure 3 (Assyria); Scheel 1989, 40 (Sumerians); Hunt 1980, 70 (Iran).

[91] Ogden 2000, 157.

[92] For in-depth articles on early interactions between Thonis-Heracleion and the Eastern Mediterranean, see Grataloup 2012 and Fabre and Goddio 2012.

[93] Nicholson 1993, 19-21.

[94] Nicholson 1993, 39-41.

were used for lead casting and duplicates were common, even among Egyptian style figures like the falcon amulets. While the elephants, horses, and child deities are firmly Ptolemaic in date, the falcons have a wider potential date range that extends into the Late Period. At Thonis-Heracleion, Egyptian-style lead amulets were frequently found in the same context as many bronze figures, and it is probable that the same people who made the bronzes made the Egyptian-style lead amulets. While the methods of manufacture were not the same (lost wax and refractory), the same ability that allowed artisans to create moulds for lead casting would have been used to create open, bivalve, and piece moulds for indirect lost wax casting for bronze.

In all, the evidence from Thonis-Heracleion demonstrates that replicative processes were common for lead and at least minimally used for bronze as early as the Late Period. Egypt also had sustained, dynamic contact with other cultures that exhibited advanced mould technology. With these considerations in mind, we must at least accept the possibility that the indirect method was used in Egypt for bronze casting. From there, with larger excavated collections, we may investigate further the frequency of the technique, and the specifics regarding its origin and its mode of transfer between cultures.

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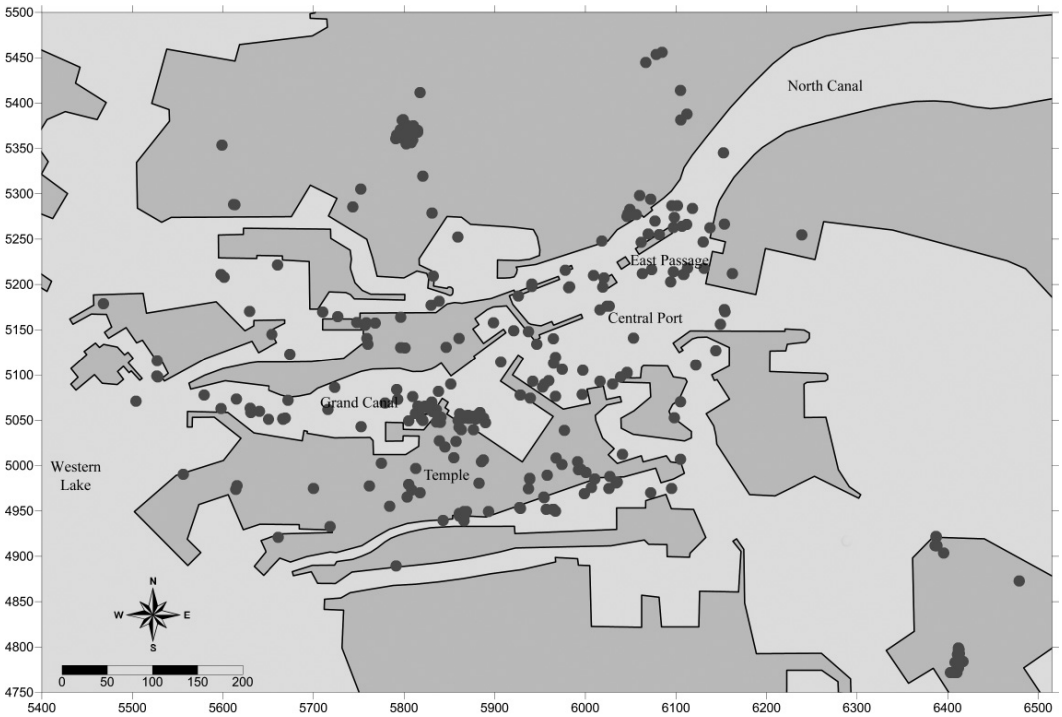

Fig. 1. Distribution of the statuettes and amulets at Thonis-Heracleion.
Base map courtesy of Franck Goddio ©Franck Goddio/Hilti Foundation. Modified by author.

Fig. 2. Mould with impressions, H9099, front. Lead, solid cast, 11.9x8.4x1.3cm, 879g. Maritime Museum, Alexandria. Photo courtesy of Elsbeth van der Wilt.

Fig. 3. Mould with impressions, H9099, back, Lead, solid cast, 11.9x8.4x1.3cm, 879g. Maritime Museum, Alexandria. Photo courtesy of Elsbeth van der Wilt.

Fig. 4. A selection of Osiris statuettes of similar size from Thonis-Heracleion. Bronze, solid cast, 7.5-9.5cm, various widths and weights. Maritime Museum, Alexandria. Author's photo.

Fig. 5. Ibis standard, H8557, multiple views from left to right: back edge (top left), top view (bottom left), and full view from the right side (right). Bronze, hollow cast. 13.7x7.9, 299g. Maritime Museum, Alexandria. Author's photo.

Fig. 6. A seated cat with the underlying 'wax' layer indicated by the arrow, H11026. Bronze, solid cast figure, hollow cast base, 8.7x5.1, 116.1g. Maritime Museum. Author's photo.

Fig. 7. Identical falcon pendants, H5578, H10718, H10734 (left to right). Lead, solid cast, 2.4x1.7 and 4.2g, 2.3x1.4 and 4.0g, 2.2x1.2 and 4.4g. Maritime Museum. Author's photo.

Fig. 8. Identical elephant statuettes, H11788 (left) and H8578 (right). Lead, hollow cast, 3.55x3.6cm and 9.7g (left) and 4.2x3.7cm and 23.2g (right). Maritime Museum. Author's photo.

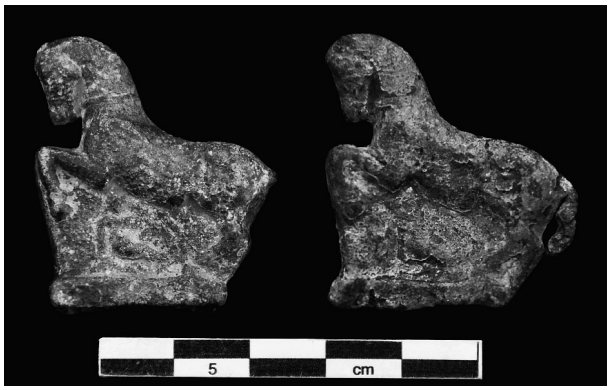

Fig. 9. Identical horse statuettes. H11402 (left) and H11485 (right). Lead, hollow cast, 3.7x3.2cm and 24.9g (left) and 3.7x3.4cm and 23.4g (right). Maritime Museum. Author's photo.

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LARGE LEAD CONTAINERS FROM THONIS-HERACLEION, EGYPT: METAL STORAGE VESSELS?

*Elsbeth M. van der Wilt**

Abstract

Underwater excavations in Thonis-Heracleion, Egypt, continue to yield large numbers of bronze and lead objects. In this paper, I discuss the dating and function of a group of nine exceptionally large lead containers in one of the ancient waterways of this Egyptian port city. Ranging in diameter from 50 to 120 cm, they are the largest objects made of lead found at the site and unique in the archaeological record. Their size, shape, and archaeological context are described before presenting parallels in different material in order to better understand their function and current location. Similar ceramic examples indicate that the metal containers were most likely used for storage of foodstuffs, such as liquids or cereals, perhaps as part of temple facilities. The framework derived from the archaeological context suggests a late fifth to early third century B.C. date, which is significantly earlier than other lead objects of considerable size. It is likely that the containers in the canal are associated with wooden poles preserved in the vicinity, creating a wooden moorage or stabilizing a narrow island. A hypothesis is advanced that they were part of a storage facility for rituals, possibly involving water offerings, conducted in this area.

Introduction

The rarity of lead objects in general and the uniqueness of these large lead containers make for an interesting case study in a series on « questions métallurgiques ». The selection of containers here are the largest and heaviest metal objects from the site and they are so far unparalleled in antiquity. All remain *in situ*. They serve as an example of both the unique nature of the assemblage as well as an indication of the serendipity of archaeological preservation and excavation.

The containers were found in Aboukir Bay on the Egyptian Mediterranean coast, 20 km east of Alexandria. Since 1996, Franck Goddio and the Institut européen d'archéologie sous-marine, in collaboration with the Egyptian Ministry of State for Antiquities, have directed the survey work and subsequent underwater excavations of the sunken landscape in Aboukir Bay.[1] This work led to the identification of two submerged settlements: East

* Oxford Centre for Maritime Archaeology and Linacre College, University of Oxford.
My gratitude goes to Alice Mouton for her invitation to participate in the research seminar series « Questions métallurgiques en milieu anatolien et syro-hittite » in Strasbourg and for her patience with my repeated promises for this contribution. I also thank Franck Goddio and the Institut Européen d'Archéologie Sous-Marine (IEASM) together with the Oxford Centre for Maritime Archaeology (OCMA) at the University of Oxford for granting me access to their data and allowing me to publish the lead objects from the site, as well as the Hilti Foundation for their generous support of the excavations. I am grateful to Damian Robinson, director of OCMA for academic support; to John Baines, David Fabre, Sanda Heinz, Emma Libonati, Charlotte Potts, and Candace Rice for their comments and suggestions; to Catherine Grataloup and

Canopus and Thonis-Heracleion. The lead containers were found in the latter town, which was located at the mouth of the ancient Canopic branch of the Nile. The main deity at Thonis-Heracleion was Amun-Gereb, whose naos was found in the temple temenos (Goddio and Fabre 2008[2]: 309, no. 115; Goddio 2007: 90, fig. 3.37). The discovery of another monument, a twin to the famous Naukratis stela at Thonis-Heracleion not only established the Egyptian name of the town as Thonis (SCA 277; Goddio and Fabre 2008[2]: 309, no. 116; von Bomhard 2012; also Yoyotte 1958: 427-30; 2001, 2004), but also demonstrated the closeness of economic ties between Naukratis and Thonis-Heracleion from at least 378 B.C. when the stela was erected (von Bomhard 2012: 98-104). At this time, Thonis-Heracleion functioned as a customs office for traffic on this branch of the Nile.

Ceramics give a broad date range for activity at the site. The earliest pottery dates to the last quarter of the seventh century B.C. and it shows a sharp decline after the middle of the second century B.C. (Grataloup 2010: 151). This is corroborated by the radiocarbon dates obtained from the ships and wooden infrastructure, such as moorings, around the town.[2] There are only a handful of Roman sherds from the site.

The Lead Containers

An unusual aspect of the archaeological material at the site of Thonis-Heracleion is the large number of lead objects recovered during survey and excavation, with 1,200 inventory numbers to date (Goddio and Fabre 2008[2]: 33-44, nos. 319-368; Goddio 2007: 125, fig. 3.104). The majority of items are relatively small and portable, such as weights (Van der Wilt 2010), statuettes (Heinz 2011), brailing rings, and sounding leads. For the purposes of the analysis of the objects until the point of deposition three broad functional categories were identified: economic, ritual, and nautical. Without excluding the potential overlap between them, these three categories serve as useful perspectives to begin to explain the presence and function of the large containers discussed here.

The lead objects were mainly found in its ancient waterways or at the edge of land and water (fig. 1). The distribution pattern runs from the north passage leading to the Nile in the north-east of the site and continues in a south-west direction through the so-called Grand Canal, north of the temple of Amun-Gereb. Such a pattern in underwater areas is significant, as the objects are effectively taken out of the normal cycles of reuse and recycling. It is likely, therefore, that the deposition of lead objects in the former waterways of the site is an important factor in the survival of the material in all its diversity.

Andrew Meadows for information concerning the ceramics and coins respectively; and to Abdelhamid and Youssria el-Ghandour for their invaluable help and hospitality in the Maritime Museum in Alexandria.

[1] Goddio 2007; for maps, see Goddio 2011: 124, fig. 7.3; 127, fig. 7.5; 128, fig. 7.6; and for an overview and discussion of the objects from Thonis-Heracleion, see Goddio and Fabre 2008[2]. For the submergence of part of the site after which it becomes part of the bay, see Stanley et al. 2007; Goddio 2010.

[2] The ^{14}C analyses will be published in a forthcoming volume on the shipwrecks in the Oxford Centre for Maritime Archaeology Monograph Series. For some examples of ^{14}C dates of timber, see Fabre 2011: 14 fig. 1.3, 19 fig. 1.7, 20 fig. 1.8, 21 fig. 1.10, 23 figs. 1.12 and 1.13, 26 fig. 1.15, 27 figs. 1.17 and 1.18, and 28 fig. 1.19.

The containers selected here are among the largest containers from Thonis-Heracleion. All containers with a diameter larger than 40 cm remain underwater, which means these containers were not studied in person.[3] Their size, however, is exceptional and justifies a discussion.[4] They were found during survey work in the Grand Canal in 2001 and 2002, when divers recorded the GPS location and general information (fig. 2). Another smaller container (no. 9) probably belonging to this group was identified in 2004. They are all closed, round, and have bulbous shapes.[5] There seems to be an ordering to the diameter of the containers: it consists of the larger containers, i.e. 100-120 cm diameter, at the southern end of the cluster and the smaller ones at the northern end (fig. 3). Their proximity suggests the possibility that they should be understood in relationship to each other.

This group of large containers was found relatively close together in the Grand Canal (fig. 2). The scale of the map is perhaps deceptive, as the distances between the containers are still significant: between each container there is an average 5 m distance. Between the containers in the north (no. 7) and in the south-east (no. 5) is 28.5 m, and the distance between the latter and the closest one to the west (no. 8) is 12.4 m.

Dating and Archaeological Context

Although the containers were found during prospection dives, the archaeological context of this group in the Grand Canal does provide enough evidence for a date range through the ceramics and coins found in the vicinity. The containers themselves were found resting within layers containing sherds and coins on a compact clay stratum (Goddio 2007: 104, figs. 3.62 and 3.63).[6] It is apparent that in the mobile layer of sand at the top objects may move around. Thus, the following description of the archaeological context should *not* be interpreted as a closed context surrounding the lead containers. They do, however, give a good general indication of the date of activity in the area.

Ceramic Evidence

Fine ware and coins were recovered from the same surveys during which the large containers were found. The ceramic assemblage is dominated by imported fine ware from Attica, mainly vessels such as *skyphoi* and *lekythoi* used for liquids (Grataloup 2012: 174-175, 180-181).[7] The assemblage is more indicative of an area of ritual activity rather than shipwrecks or storage activity. The squat *skyphoi* date from the middle of the fifth century

[3] Two photographs of one of the large containers are published here, as they are the only ones currently available.

[4] The chemical composition of the metal has also not been determined, which may provide a worthwhile future avenue of research for this category specifically. Research on Roman pewter ware shows that the ratio of tin, copper, and lead in the alloy varies according to the shape and size of the intended vessel, see Pollard 1983.

[5] Franck Goddio, pers. comm.

[6] The caption of fig. 3.63 should read "Stratigraphy of the excavation H2 near the *lead container* Inv. No. 2725" (my emphasis), see Goddio 2007: 104.

[7] I thank Catherine Grataloup for her help and comments on the discussion of the ceramics.

to the first half of the fourth century B.C. and they taper off in the second half of that century. Many *lekythoi* are dated from the late fifth to first half of the fourth century B.C. There are also fragments of painted table amphoras, of either East Greek or Levantine origin (Lehmann 2000), dated to the end of the fifth and first half of the fourth century B.C. Amphoras and local wares, on the other hand, are rare, except for a production of fine ware vessels (cups, bowls and jugs) in marl clay, particularly typical at certain sites in the Egyptian Delta during the Persian period (Grataloup 2012).

Numismatic Evidence

The coins found in the vicinity of the containers in the Grand Canal all originate around the southern edge of the cluster, container no. 5 being closest in most cases.[8] Within one meter of this container was an Athenian bronze coin B.C. (exc. no. 2793, 4th century B.C., 0.75 m distance), a Macedonian bronze coin of Alexander of an uncertain mint (exc. no. 678, c. 336-323 B.C., 0.75 m distance), and a Ptolemaic coin from series 2 (exc. no. 685, 302-261 B.C., 0.50 m distance).[9] A Macedonian bronze coin of Philip II (exc. no. 687, c. 358-336 B.C.) and a bronze coin from Cos (exc. no. 682, 4th century B.C.) were found at around 1.5 m distance. More coins were found in a radius of between 2 and 5.6 m from the group (table 1) and taken together the numismatic evidence supports a fourth to early third century B.C. date for the strata. There are four coins in total in table 1 (exc. nos. 2789_1, 2789_12, 2789_25, and 2789_29) that should be dated later than the third century B.C. Since they are a small number, from a relatively mobile layer as opposed to a closed stratigraphic unit, and in view of the absence of ceramics of later date, I consider the coins intrusive and possibly dropped in the canal by accident at a later date.

Other Evidence

Excavations in the Grand Canal (Goddio 2007: 102-111, figs. 3.61, 3.62, 3.63, 3.64, 3.65, and 3.71) were conducted near the mole in H2, directly north of the temple, closest to the large containers. They yielded objects from the whole occupation range of the site, but the majority is from the fourth and third centuries B.C. (Goddio 2007: 105). Many bronze ritual objects were found in the area, as well as a concentration of the gold finds (Goddio 2007: 124-125, figs. 3.102, 3.103, and 3.104). In the centre of the canal near the lead containers, wooden posts were discovered, which the excavator suggests to interpret as possibly part of a moorage or anchoring posts or narrow island.[10] Radiocarbon analysis of the samples from the wooden posts presents a second half of the fourth century B.C. date (Goddio 2007: 105). A broader date range from the sixth to first centuries B.C. was

[8] This discussion is part of ongoing work on the coins and I thank Andrew Meadows for sharing his results so far with me. The distances between objects are reconstructed from the distribution map, i.e. there is a single point indicating the lead container from which the distance to the coin is measured. The measurements have not been altered to account for the radius of the container, i.e. if the coin is 75 cm away from the container and that container has a radius of 50 cm, the distance may in fact only be 25 cm from the maximum diameter.

[9] For the dating and seriation of the Ptolemaic coins, see Picard and Faucher 2012.

[10] Franck Goddio, pers. comm.; see also Goddio 2007: 105.

obtained from samples from the wrecks and wooden anchor stocks in the Grand Canal (Goddio 2007: 106-107, fig. 3.68). Other finds from the temple area are indicative of its important position during the fourth and third centuries B.C., e.g. the Heracleion stela, twin to the Naukratis stela, from the reign of Nektanebo I, year 1, i.e. 378 B.C. (SCA 277; von Bomhard 2012; Goddio 2007: 83).

To summarize, the ceramics in the vicinity of the containers suggest activity in the late fifth century and diminishing in the second half of the fourth, whereas the coins suggest the (mid-) fourth century to early third century dating. Taken together, the ceramics and the coins combine into a robust framework indicating a late fifth to early third century B.C. date. This is significantly earlier than the earliest known lead vessels of considerable size, i.e. the lead braziers from Bodrum, Turkey, which are dated to the end of the second to the middle of the first century B.C. (Leonard 1973).

INTERPRETATION

After establishing this framework for the containers, it is time to address the location of the containers at the bottom of a canal. The Grand Canal was the main waterway through the site running north of the temple of Amun-Gereb. Many boats would have frequented the canal with cargoes of a diverse nature: boats of temple personnel associated with the temple's economic role in levying taxes, the general supply and logistics of the temple, with ritual activity with processions, as well as the regular traffic one would expect on a waterway. Objects at the bottom of this canal could have been deposited there as the result of different processes: deposition after ritual activity, directly from the running of the temple itself, and rubbish depositions as the natural result of a busy thoroughfare are also likely to be present.

Interestingly, there are no exact parallels for lead containers of this shape and size. A discussion of objects of a equal size is helpful in order to address the function of the large containers on a conceptual level. The functional attributes of large ceramic containers are similar in terms of accessibility, stability, transportability, and 'graspability' (Christakis 2005: 5) and thus provide a useful concept for the metal containers. The examples of large ceramic vessels such as Greek *pithoi* and Roman *dolia* will serve for this purpose. Examples are known in the Aegean from the Late Bronze Age onwards, and in general they are very suited to store subsistence commodities, such as grain and wine (Christakis 1999: 4; 2005: 53-59). Examples of straight-sided ceramic *pithoi* from the fourth century in domestic contexts from Egypt are known from Aswan (Müller 2010: 432, 442 fig. 5) and Elephantine.[11]

[11] They are straight-sided storage jars from area 15 of smaller dimensions than the lead containers at 45-65 cm diameter and 62-78 cm in height. One is dated to 550-400 B.C. (Phase V), see Aston 1999: 220 no. 1970, pl. 68 and b/w pl. 11; and two others were found in archaeological layers in house P associated with the reign of Nektanebo II (360-342 B.C.) (Phase VIa, house P), see Aston 1999: 266 no. 2305, pl. 85 and b/w pl. 14; and 270 no. 2337, pl. 87 and b/w pl. 15.

The lead vessels from Thonis-Heracleion are closer to the Roman *dolia* with their bulbous shapes. Container no. 5 (figs. 4 and 5) is similar in shape and size to the *dolia* found on ships and on land from the western Mediterranean (Marlier 2008; Heslin 2011). The containers on the wrecks are specifically associated with a regional wine trade to Gaul, which was based at Minturnae, Italy (Heslin 2011: 161), and they are interpreted as a reaction to a need for the bulk transportation of cheap wine. The earliest example, the Cap Bénat B (Parker 1992: 98 no. 173), dates to the late second to early first century B.C. The latest are from the middle of the third century A.D., with a distinct peak in *dolium* use onboard ships in the first century A.D. (Heslin 2011: 157, 158-159, table 9.1).

The large size of the ceramic vessels such as *dolia* has repercussions for its functionality. In the archaeological record, large ceramic vessels occur either as permanent fixtures in a ship, or buried in the floors of warehouses with part of the vessel, or even just the neck, protruding above ground. From the archaeological context of preserved examples in general it is clear that large ceramic storage containers were often left behind when a settlement was abandoned (Schiffer 1987: 95, fig. 4.7). Moving a *dolium* would be difficult, risking fracturing due to the sheer mass both of the vessel and its content (Heslin 2011: 162). The transportability of the large lead containers is an important consideration, with the high mass density of lead making these containers even heavier than their ceramic counterparts. They are, therefore, likely to have been immobile or fixed, perhaps on a ship, or in a storage context of a warehouse or temple.[12] The contents of the containers would have been decanted from the larger vessel using pumps and smaller containers (Heslin 2011: 164-166; Christakis 2005: 54).

Turning to accessibility and stability, the presence of the containers in the middle the Grand Canal could suggest that they were once part of the outfit of a ship, even with difference in diameter size. The pattern of the 11 ceramic *dolia* from the Grand Ribaut D wreck (Parker 1992: 203-204, no. 477), for example, also shows a difference in size: some are slightly larger than others and there is a general distribution difference where the *dolia* are at the centre of the wreck while the space at the opposite ends is for amphoras (Gianfrotta and Hesnard 1987: pl. XLIX). The distribution within this wreck is three *dolia* per row, whereas the Thonis-Heracleion distribution shows a 'row' of two.

Considering this potential nautical aspect as part of a ship's outfit, it is interesting to note that *dolia* were better suited to riverine transport, because they were able to carry more in less hold space than the equivalent volume in amphoras, making transport more efficient and conducive to shallow waters.[13] This observation is significant in the context of Thonis-Heracleion in its marshy environment at the mouth of the Nile. The majority of the wood samples from the wrecks in Thonis-Heracleion are of the local acacia tree, *Acacia sp*. and *Acacia tortilis*/*radiana* (Fabre 2011: 17-19; Gale et al. 2003: 335-336) and for a certain number of ships it is clear that the hull construction is very suited to the marshy and shallow water environment of the Egyptian Mediterranean coast (Fabre 2011: 28-29). The main

[12] For an analysis of the context of Cretan Bronze Age *pithoi*, see Christakis 2005: 53-59.

[13] Heslin 2011: 163; following Pallarés 1985: 617-618; and Marlier 2008.

drawback, however, in interpreting the containers as part of a ship's equipment is the lack of associated timber that would indicate the presence of an accompanying hull. Consequently, the possibility of the containers being part of a ship's outfit is only a theoretical one.

The deliberate deposition of the vessels in the water is another option, if the vessels were connected to rituals and therefore too sacred to reuse or recycle. Was sinking in the water perhaps the most convenient method to dispose of them, in the middle of the canal where the water may have been deepest? This, however, would pose practical problems, as the act of removing them from a ship would cause a weight shift that would compromise the balance of the boat even if the containers were empty. The weight shift in the boat would have been extremely difficult to manage,[14] although a wide, flat-bottomed riverine vessel would perhaps be easier to manage in such a scenario than a seafaring ship with a round hull. Neither of the interpretations proffered so far, however, seem very satisfactory.

At this point I would like to offer a hypothesis that has a better fit with the archaeological evidence presented. Storage facilities would have been necessary both for the daily provisions of the sanctuary as well as fulfilling the economic role of the temple in terms of taxation. The wooden posts may suggest some form of harbour infrastructure, perhaps as a wooden mooring area or as stabilizations for a small narrow island supporting the large containers. The large quantity of fine ware and other bronze and gold objects found in the Grand Canal supports the idea that this canal was an area with much ritual activity. Consequently, the lead containers may be interpreted as storage managed by the temple for dedicatory purposes. The fine ware found in the canal may have been used to decant the liquid in the large vessels (Christakis 2005: 54). The lead containers presumably stored a liquid such as fresh water or wine to be dedicated in the cups and jugs.[15] Water seems the most likely candidate: water libation rituals are common in Egyptian temples.[16] Demand would also be high for drinking water in a harbour town at the edge of the sea. And finally, the management of the saline seawater, the tides, and the Nile flood, i.e. fresh water carrying fertile mud and silts from further upstream, would have been a major concern for Thonis-Heracleion at the interface between the sea, the Nile, and the canal system connecting the town.[17]

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[14] It is precisely the problem of potentially capsizing a ship as the result of the weight shift if a *dolium* fractures that may explain the limited use of this type of ship, see Heslin 2011: 161, esp. n. 10.

[15] The text of four near-identical 19th dynasty donation stelae found in Gebel Silsileh mentions throwing offerings into the Nile, an act rarely mentioned in Egyptian texts, see Barguet 1952: 62-63 and n. 1.

[16] I give two references to water rituals performed in the vicinity of a body of water: for barque sanctuaries see Colin 2005: 283-285; for the Taharqa ramp leading to the water in Karnak, see Traunecker 1972. For libations in general, see Borghouts 1979.

[17] For a study on the role of water, the Nile flood, and its connotations of bounty in the Hellenistic and Roman period, see Wild 1981. The examples discussed by Wild are of a different nature than the ritual proposed here, but it does demonstrate the importance of water as a concept in Egyptian (inspired) ritual. A unique colossal Hapy statue (SCA 281), a male deity personifying the Nile flood, stood near the temple, see Goddio and Fabre 2008[2]: 105, 306 no. 102; Goddio 2007: 90 fig. 3.37. The presence of such a figure in this harbour town is perhaps significant in this respect, but the connection between this statue and a cult related to water requires development in a separate study, which I intend to undertake in the future.

CONCLUSIONS

Although there is limited information regarding the containers themselves, it is possible to draw some conclusions about the dating, function, and location of these nine containers from the disparate strands of evidence discussed here.

Ceramics and coins establish the chronological boundaries of the site as a whole. More specifically, the archaeological context of these lead containers suggests a late fifth to early third century B.C. date. Ceramic sherds across the site drop sharply in number by the middle of the second century B.C., which may serve as a general *terminus ante quem*.

Comparison with large ceramic containers elsewhere provides interesting information to interpret the function and use of the lead examples. Ceramic vessels of similar dimensions are mostly used for storage of foodstuffs. They are found in a fixed environment, either buried in the floor, or as a fixture in a ship, after which they were left *in situ* at abandonment. For the lead containers from Thonis-Heracleion this suggests a similar storage context associated with a wooden mooring area, or perhaps a narrow island, and subsequent deposition *in situ*. This area may consequently have been part of a storage facility for rituals, perhaps involving offerings of water, conducted in the Grand Canal.

This case study shows the potential of these objects to shed light on activities in the town despite the lack of direct parallels. The choice of lead as material for these containers is unique and requires further analysis with regard to its abundance in Thonis-Heracleion. It is clear that large lead objects appeared earlier and its range is wider than previously known. In short, Thonis-Heracleion opens up a completely new perspective on the question of lead metallurgy in antiquity.

CATALOGUE

No. 1: H. 2002.H1.3801; diameter 120 cm, H. 100 cm; in situ, round and bulbous shape.
Distance from no. 2 is 0.75 m.

No. 2: H.2004.XX.8591; diameter 110 cm; in situ, round and bulbous shape.

No. 3: H.2002.H1.3802; diameter 100 cm, H. 80 cm; in situ, round and bulbous shape.
Distance from no. 1 is 0.75 m; from no. 4 is 4.2 m; from no. 7 is 3.8 m; from no. 3 is 6.1 m; from no. 5 is 3.5 m.

No. 4: H.2002.H1.2927; diameter 100 cm, H. 80 cm; large container, round and bulbous shape.
Distance from no. 7 is 5.1 m; from no. 5 4.8 m; from no. 2 is 6.1 m; from no. 6 is 5.6 m.

No. 5: H.2001.H2.2725; diameter approximately 120 cm; in situ, round and bulbous shape with two perforations in walls near the shoulder of the vessel.
Distance from no. 7 is 4.6 m; from no. 2 is 4.2 m.

No. 6: H.2001.H1.2415; diameter 75 cm, H. 85 cm; round and bulbous shape.
Distance from no. 3 is 5.8 m; from no. 2 is 3.5 m.

No. 7: H.2001.H1.2417; diameter 75 cm; round and bulbous shape.
Distance from no. 3 is 5.6 m.

No. 8: H.2002.H1.2928; dimensions unknown; large container, round and bulbous shape.
Distance from no. 4 is 4.6 m; from no. 3 is 5.1 m.

No. 9: H.2004.XX.8849; diameter 50 cm; round and bulbous shape.

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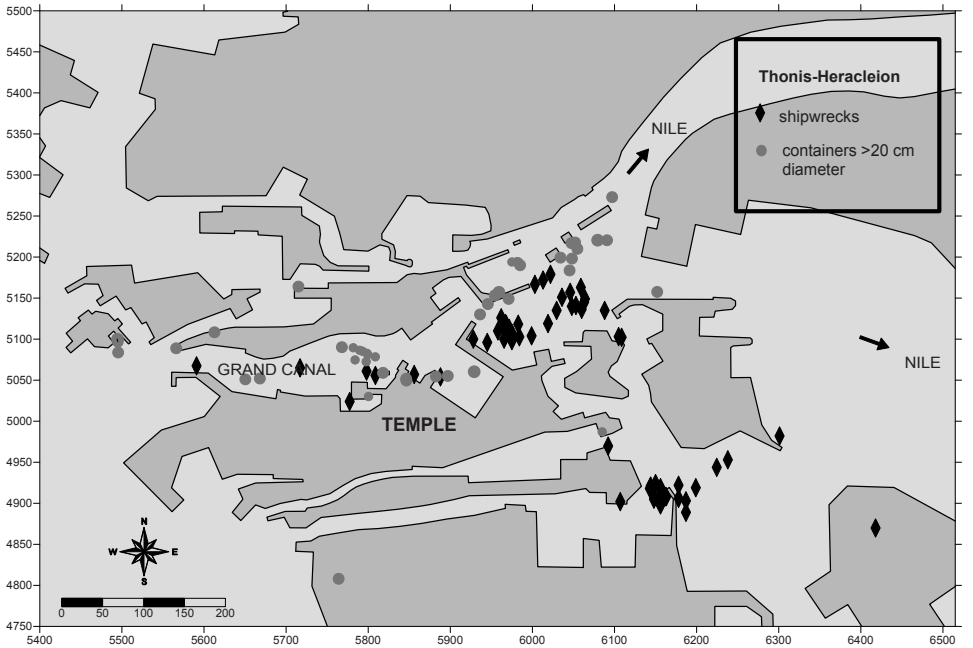

Fig. 1. Lead containers, all with a diameter of 20 cm and larger (© Franck Goddio / Hilti Foundation).

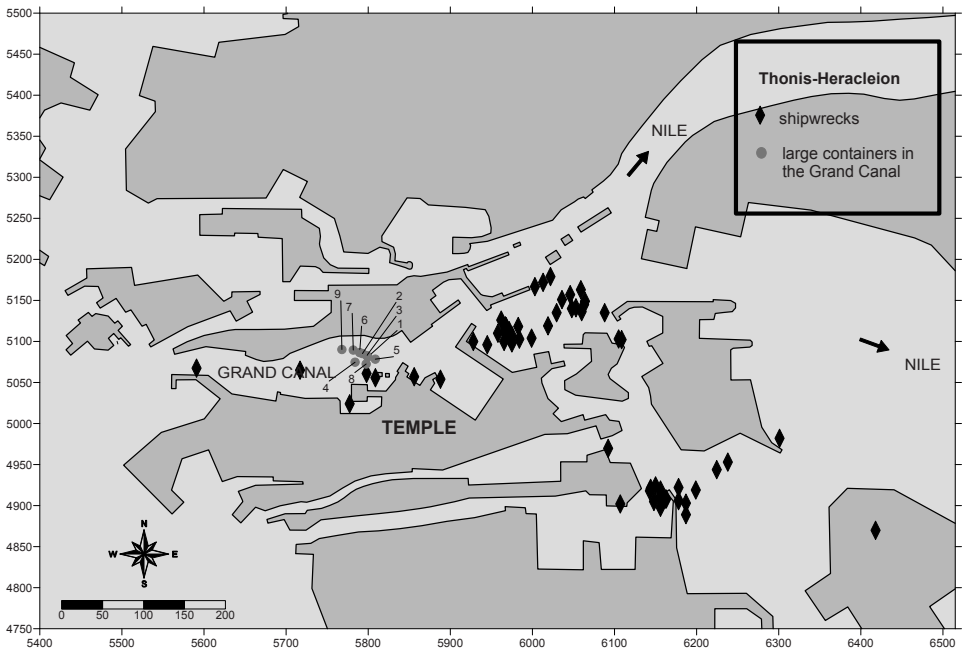

Fig. 2. Group of large containers in the Grand Canal (© Franck Goddio / Hilti Foundation).

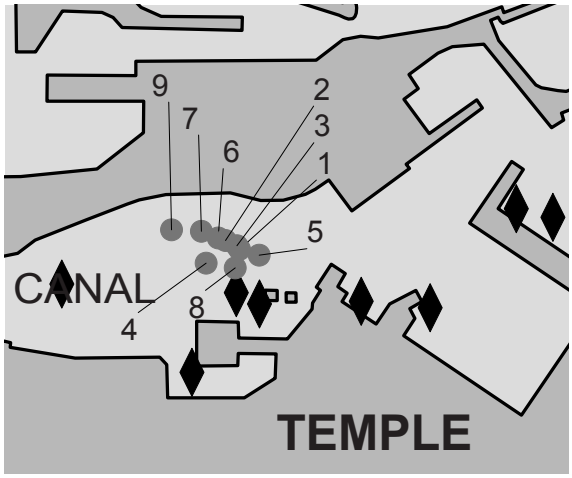

Fig. 3. Detail of the cluster in the Grand Canal (© Franck Goddio / Hilti Foundation).

Excavation number	Distance	Date, type
681	2.1 m (from no. 5)	Ptolemaic series 2-3
1400	2.5 m (from no. 8), 2 m (from no. 5)	Ptolemaic series 2-3
1412_7	2,5 m (from no. 5)	c. 336-323 BCE, illegible Macedonian coin of Alexander
2789_4 and _5	2.6 m (from no. 5)	Ptolemaic series 2
2789_2		Ptolemaic series 2-3
2789_1		Ptolemaic series 6-7
2789_12 and 2789_25		Ptolemaic series 9
2789_29		illegible Roman coin
2792	3 m (from no. 5)	4th c. BCE, Athenian tetradrachm
683	3.5 m (from no. 5)	4th c. BCE, bronze coin of Rhodes
6492_1 and 6492_2	3.5 m (from no. 4)	Ptolemaic series 2-3
689	3.9 m (from no. 5)	Ptolemaic series 1-2
690	4.1 m (from no. 5)	Ptolemaic series 1-2
8015	4.9 m (from no. 6)	Ptolemaic series 2
680	5 m (from no. 5)	4th c. BCE, bronze coin of Cos
2745_2	5.6 m (from no. 5)	mid-late 4th c. BCE, bronze coin of Sidon

Table 1. Coins in the vicinity of the cluster of large containers.

Fig. 4. Container no. 5, diam. ca. 120 cm (© Franck Goddio / Hilti Foundation).

Fig. 5. Container no. 5, diam. ca. 120 cm (© Franck Goddio / Hilti Foundation).